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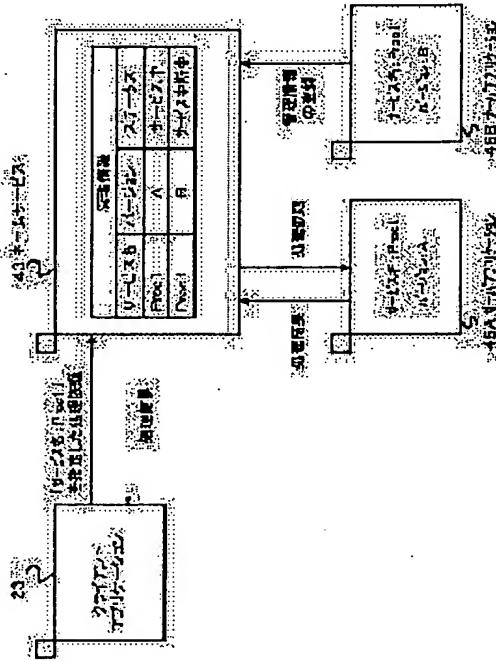
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## (54) CLIENT-SERVER SYSTEM, METHOD FOR MANAGING SERVER APPLICATION AND RECORDING MEDIUM

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a client-server system, etc., capable of providing continuous service even when the version of a server application is updated or the like.

**SOLUTION:** A server stores plural server applications having the same service name but having respectively different versions and management information including the service name and version information of each server application and status information indicating whether the server application is in a service enabled state or not. Name service 43 in the server refers to the management information in accordance with a processing request from a certain client application in a client and requests the execution of processing to a server application 45A in which status information indicating a service enabled state is set up out of plural server applications of a service name specified by the processing request.



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## CLAIMS

## [Claim]

[Claim 1] It has a server and the client connected to this server by the network. each aforementioned client A predetermined service name is specified and a processing request is transmitted to the aforementioned server. the aforementioned server It is the client/server system which performs application corresponding to the service name specified by the processing request from the aforementioned client. the aforementioned server A storage means to memorize the application with which a version is different by the same service name, A management information storage means to memorize the management information containing the status information which shows whether it is the status which can serve a service name, a version information, and the concerned application about each application. The aforementioned management information is referred to according to the processing request which received from the aforementioned client. The client/server system characterized by equipping the application with which the status information which shows that it is in the status among the applications of the service name specified by this processing request which can be served is set up with a control means to request processing.

[Claim 2] Until the aforementioned control means of the aforementioned server registers the management information of the application of this \*\*\*\* into the aforementioned management information storage means and will be in the status which can serve the application of this \*\*\*\*, in case new application is memorized by the aforementioned storage means The status information which shows that it is in the status which cannot be served is set as the concerned management information. A client/server system given in the claim 1 characterized by what it has further a means to set up the status information which shows that it is in the status which can be served for after being in the status which can be served.

[Claim 3] In case application is deleted from the aforementioned storage means, when the concerned application distinguishes whether it is under [ execution ] \*\*\*\*\* and is not performing [ be / it ], the aforementioned control means of the aforementioned server In being under execution by deleting the management information of this application While the status information which shows that it is in the status which cannot be served is set as the management information of this application The claim 1 characterized by what it has further a means to delete the management information of the concerned application after completing processing by this application for, or a client/server system given in 2.

[Claim 4] It is a client/server system given in the claim 1 which the aforementioned server is further equipped with a means to memorize the compatibility management information which shows the application of other versions which are compatible with this application about each application, and is characterized by what the aforementioned control means of the aforementioned server is further equipped with a means to specify application with reference to the aforementioned compatibility management information in case the application which requests processing is specified for, or any 1 term of 3.

[Claim 5] The client and network which specify a predetermined service name and transmit a processing request connect. A storage means to memorize the application with which it is the server which performs application corresponding to the service name specified by the processing request from the aforementioned client, and a version is different by the same service name, A management information storage means to memorize the management information containing the status information which shows whether it is the status which can serve a service name, a version information, and the concerned application about each application. The aforementioned management information is referred to according to the processing request which received from the aforementioned client. The server characterized by equipping the application with which the status information which shows that it is in the status among the applications of the service name specified by this processing request which can be served is set up with a control means to request processing.

[Claim 6] It is the server of the publication by the claim 5 which characterizes by what it has further the means set up the status information which shows that the aforementioned control means is in the status which can serve after set the status information which shows that it is in the status which cannot serve as the concerned management information and being in the status which can serve until it registers the management information of the application of this \*\*\*\* into the aforementioned management-information storage means and it will be in the status which can serve the application of this \*\*\*\*, in case new

[Claim 7] In case application is deleted from the aforementioned storage means, when the concerned application distinguishes whether it is under [ execution ] \*\*\*\*\* and is not performing [ be / it ], the aforementioned control means In being under execution by deleting the management information of this application While the status information which shows that it is in the status which cannot be served is set as

the management information of this application The claim 5 characterized by what it has further a means to delete the management information of the concerned application after completing processing by this application for, or a server given in 6.

[Claim 8] It is a server given in the claim 5 which the aforementioned server is further equipped with a means to memorize the compatibility management information which shows the application of other versions which are compatible with this application about each application, and is characterized by what the aforementioned control means is further equipped with a means to specify application with reference to the aforementioned compatibility management information in case the application which requests processing is specified for, or any 1 term of 7.

[Claim 9] The client which specifies a predetermined service name and transmits a processing request, and the server which performs application corresponding to the service name specified by the processing request from the aforementioned client, While the application with which it is an application management method in a \*\*\*\*\* system, and a version is different by the same service name in the aforementioned server is memorized The storage step which memorizes the management information containing the status information which shows whether it is the status which can serve a service name, a version information, and the concerned application about each application, When the aforementioned server receives a processing request from the aforementioned client, the aforementioned management information is referred to. The application management method characterized by equipping the application with which the status information which shows that it is in the status among the applications of the service name specified by this processing request which can be served is set up with the control step which requests processing.

[Claim 10] Until the aforementioned control step registers the management information of the application of this \*\*\*\* and will be in the status which can serve the application of this \*\*\*\*, in case new application is memorized by the aforementioned server The new registration step which sets up the status information which shows that it is in the status which can be served after setting the status information which shows that it is in the status which cannot be served as the concerned management information and being in the status which can be served, In case application is deleted from the aforementioned server, in not being [ be / it ] under execution by the concerned application distinguishing whether it is under / execution / \*\*\*\*\* In being under execution by deleting the management information of this application While the status information which shows that it is in the status which cannot be served is set as the management information of this application An application management method given in the claim 9 characterized by including at least the deletion step and one side of \*\* which delete the management information of the concerned application after completing processing by this application.

[Claim 11] They are the claim 9 which the aforementioned storage step memorizes further the compatibility management information which shows the application of other versions which are compatible with this application about each application, and is characterized by what the aforementioned control step is further equipped with the step which specifies application with reference to the aforementioned compatibility management information in case the application which requests processing is specified for, or an application management method given in 10.

[Claim 12] The client and network which specify a predetermined service name for a computer and transmit a processing request connect. It is the record medium which recorded the program for making it function as a server which performs application corresponding to the service name specified by the processing request from the aforementioned client and in which computer reading is possible. A storage means to memorize the application with which a version is different by the same service name in this computer, The management information containing the status information which shows whether it is the status which can serve a service name, a version information, and the concerned application about each application, The compatibility management information which shows the application of other versions which are compatible with each application, It responds to the means feared the account of \*\*, and the processing request which received from the aforementioned client. A control means to request processing from the application of the service name specified by this processing request at least with reference to one side of the aforementioned management information and the aforementioned compatibility management information, Until it registers the management information of the application of this \*\*\*\* and it will be in the status which can serve the application of this \*\*\*\*, in case new application is memorized by the aforementioned server The status information which shows that it is in the status which cannot be served is set as the concerned management information. The record medium which recorded the program for considering as a new registration means to set up the status information which shows that it is in the status which can be served, and making it function after being in the status which can be served and in which computer reading is possible.

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#### DETAILED DESCRIPTION

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## [Detailed description]

[0001]

[The technical field to which invention belongs] this invention relates to the client/server system which makes predetermined application perform processing, a server, an application management method, etc. according to the processing request from a client.

[0002]

[Prior art] Conventionally, in the client/server system, for example, the management of the server application performed in a server was performed using the service name (process name), and the processing request from a client also specifies this service name, and was made. In this case, in a server, application applicable to the service name which the processing request from a client specifies among two or more server applications memorized by the server is performed.

[0003]

[Object of the Invention] the case where the server application of the corresponding service name is starting in a server in the above systems when renewing predetermined server application (upgrade etc.) — for example, the executive operation is suspended at once, server application is renewed, after a completion of renewal, new server application is started and a service is offered. For this reason, there was a case where the service to a client was temporarily interrupted from a server.

[0004] Moreover, in renewal of predetermined server application, deletion etc. carries out the information on the existing server application from the management information for managing each server application, and new server application is registered into management information. Since server application became unable to perform temporarily at this time, the term which cannot provide a client with a service had occurred.

[0005] this invention was made in view of the situation mentioned above, and relates to the client/server system which can offer a continuous service also in the time of renewal of server application etc., a server, an application management method, etc.

[0006]

[The means for solving a technical problem] In order to attain the above-mentioned purpose, the client/server system concerning the 1st viewpoint of this invention It has a server and the client connected to this server by the network, each aforementioned client A predetermined service name is specified and a processing request is transmitted to the aforementioned server. the aforementioned server It is the client/server system which performs application corresponding to the service name specified by the processing request from the aforementioned client. the aforementioned server A storage means to memorize the application with which a version is different by the same service name, A management information storage means to memorize the management information containing the status information which shows whether it is the status which can serve a service name, a version information, and the concerned application about each application, The aforementioned management information is referred to according to the processing request which received from the aforementioned client. The application with which the status information which shows that it is in the status among the applications of the service name specified by this processing request which can be served is set up is equipped with a control means to request processing.

[0007] According to such a configuration, the application of the same service name can be managed for every version, and it can know whether it is in the status which can serve the application from the management information of each application. A continuous service provision becomes possible, without stopping the service to a client also in the status which the server application specified by the processing request from a client cannot serve by the upgrade middle class by this, since processing can be requested from the existing server application.

[0008] After the aforementioned control means of the aforementioned server sets the status information which shows that it is in the status which cannot serve as the concerned management information and will be in the status which can serve until it registers the management information of the application of this \*\*\*\* into the aforementioned management-information storage means and will be in the status which can serve the application of this \*\*\*\*, in case new application is memorized by the aforementioned storage means, it may equip with the means set up the status information which shows that it is in the status which can serve Processing can be requested from other server applications of the same service name, when the status information of the purport which a service is interrupting is set up and a processing request is received from a client in the meantime until the service of the application was attained in case new server application is built

into this server thereby for example. And when the service of new server application is attained, setting change of the status information is carried out, and processing can be requested from new server application when a processing request is received from a client.

[0009] The aforementioned control means of the aforementioned server deletes the management information of this application, when the concerned application distinguishes whether it is under [ execution ] \*\*\*\*\* and it is not being performed [ be ], in case application is deleted from the aforementioned storage means, and in being under execution, while it sets the status information which shows that it is in the status which cannot be served as the management information of this application, after completing processing by this application, it may be further equipped with a means delete the management information of the concerned application.

[0010] The aforementioned server is further equipped with a means to memorize the compatibility management information which shows the application of other versions which are compatible with this application about each application, and in case the aforementioned control means of the aforementioned server specifies the application which requests processing, it may be further equipped with a means to specify application with reference to the aforementioned compatibility management information.

[0011] Moreover, the server concerning the 2nd viewpoint of this invention is connected by the client and network which specify a predetermined service name and transmit a processing request. A storage means to memorize the application with which it is the server which performs application corresponding to the service name specified by the processing request from the aforementioned client, and a version is different by the same service name, A management information storage means to memorize the management information containing the status information which shows whether it is the status which can serve a service name, a version information, and the concerned application about each application, The aforementioned management information is referred to according to the processing request which received from the aforementioned client. The application with which the status information which shows that it is in the status among the applications of the service name specified by this processing request which can be served is set up is equipped with a control means to request processing.

[0012] According to such a configuration, the application of the same service name can be managed for every version, and it can know whether it is in the status which can serve the application from the management information of each application. A continuous service provision becomes possible, without stopping the service to a client also in the status which the server application specified by the processing request from a client cannot serve by the upgrade middle class by this, since processing can be requested from the existing server application.

[0013] After the aforementioned control means sets the status information which shows that it is in the status which cannot be served as the concerned management information and will be in the status which can serve until it registers the management information of the application of this \*\*\*\* into the aforementioned management-information storage means and will be in the status which can serve the application of this \*\*\*\*, in case new application is memorized by the aforementioned storage means, it may be further equipped with a means set up the status information which shows that it is in the status which can serve.

[0014] The aforementioned control means deletes the management information of this application, when the concerned application distinguishes whether it is under [ execution ] \*\*\*\*\* and it is not being performed [ be / it ], in case application is deleted from the aforementioned storage means, and in being under execution, while it sets the status information which shows that it is in the status which cannot be served as the management information of this application, after completing processing by this application, it may be further equipped with a means delete the management information of the concerned application.

[0015] The aforementioned server may be further equipped with a means to memorize the compatibility management information which shows the application of other versions which are compatible with this application about each application, and in case the aforementioned control means specifies the application which requests processing, it may be further equipped with a means to specify application with reference to the aforementioned compatibility management information.

[0016] Moreover, the application management method concerning the 3rd viewpoint of this invention The client which specifies a predetermined service name and transmits a processing request, and the server which performs application corresponding to the service name specified by the processing request from the aforementioned client, While the application with which it is an application management method in a \*\*\*\*\* system, and a version is different by the same service name in the aforementioned server is memorized The storage step which memorizes the management information containing the status information which shows whether it is the status which can serve a service name, a version information, and the concerned application about each application, When the aforementioned server receives a processing request from the aforementioned client, the aforementioned management information is referred to. The application with which the status information which shows that it is in the status among the applications of the service name specified by this processing request which can be served is set up is equipped with the control step which requests processing.

[0017] According to such a configuration, the application of the same service name can be managed for every version, and it can know whether it is in the status which can serve the application from the management information of each application. A continuous service provision becomes possible, without stopping the service to a client also in the status which the server application specified by the processing request from a client cannot serve by the upgrade middle class by this, since processing can be requested from the existing server

application.

[0018] Until the aforementioned control step registers the management information of the application of this \*\*\*\* and will be in the status which can serve the application of this \*\*\*\*, in case new application is memorized by the aforementioned server The new registration step which sets up the status information which shows that it is in the status which can be served after setting the status information which shows that it is in the status which cannot be served as the concerned management information and being in the status which can be served, In case application is deleted from the aforementioned server, in not being [ be / it ] under execution by the concerned application distinguishing whether it is under / execution / \*\*\*\*\* In being under execution by deleting the management information of this application While the status information which shows that it is in the status which cannot be served is set as the management information of this application, after completing processing by this application, at least the deletion step and one side of \*\* which delete the management information of the concerned application may also be included.

[0019] The aforementioned storage step may memorize further the compatibility management information which shows the application of other versions which are compatible with this application about each application, and in case the aforementioned control step specifies the application which requests processing, it may be further equipped with the step which specifies application with reference to the aforementioned compatibility management information.

[0020] Moreover, the record medium concerning the 4th viewpoint of this invention The client and network which specify a predetermined service name for a computer and transmit a processing request connect. It is the record medium which recorded the program for making it function as a server which performs application corresponding to the service name specified by the processing request from the aforementioned client and in which computer reading is possible. A storage means to memorize the application with which a version is different by the same service name in this computer, The management information containing the status information which shows whether it is the status which can serve a service name, a version information, and the concerned application about each application, The compatibility management information which shows the application of other versions which are compatible with each application, It responds to the means feared the account of \*\*, and the processing request which received from the aforementioned client. A control means to request processing from the application of the service name specified by this processing request at least with reference to one side of the aforementioned management information and the aforementioned compatibility management information, Until it registers the management information of the application of this \*\*\*\* and it will be in the status which can serve the application of this \*\*\*\*, in case new application is memorized by the aforementioned server The program for considering as a new registration means to set up the status information which shows that it is in the status which can be served, and making it function on the concerned management information, after setting up the status information which shows that it is in the status which cannot be served and being in the status which can be served is recorded.

[0021]

[Gestalt of implementation of invention] Hereafter, the client/server system concerning the gestalt of enforcement of this invention is explained with reference to a drawing. The block diagram of the client/server system concerning the gestalt of enforcement of this invention is shown in drawing 1. This system is equipped with the client 1 which consists of a personal computer, a work station, etc., and the server 3 connected to each client 1 by the network as shown in drawing 1.

[0022] A client 1 is equipped with the storage section 11, the control section 13, and the communications department 15. The storage section 11 memorizes various programs (OS, application, etc.), data, etc. which are started by the client 1. A control section 13 is for controlling the client 1 whole, for example, transmits a predetermined processing request to a server 3 through the communications department 15 according to the input to the input section by the user not to illustrate etc., and carries out a display etc. to the display which does not illustrate the processing result received from the server 3. The communications department 15 controls the communication between a client 1 and the server 3.

[0023] A server 3 is equipped with the storage section 31, the control section 33, and the communications department 35. The storage section 31 memorizes various programs (OS, application, etc.), data, etc. which are started by the server 3. It mentions later about a name service, the server application, etc. which are memorized by this storage section 31. Corresponding to the processing request which is for controlling the server 3 whole, for example, received from the client 1 through the network, a control section 33 starts a predetermined user program (server application), and transmits to the client 1 of the processing result demand origin. The communications department 35 controls the communication between a server 3 and each client 1.

[0024] Next, the client 1 in this client/server system and the software configuration of server 3 \*\* are shown in drawing 2. As shown in drawing 2 (A), the client 1 is equipped with OS21, the client application 23, etc., these are memorized by the storage section 11 mentioned above, a control section 13 etc. performs and each function is realized. OS21 controls and manages the fundamental processing operation in a client 1. The client application 23 is software which operates on OS21, for example, transmits a predetermined processing request to a server 3 according to the input designation from an user etc. In this processing request, the service name of the service (process) requested from a server 3 is specified. For example, in requesting a service of service-name "Proc1", it transmits the processing request of the content which specifies service-name "Proc1" to a server 3. Moreover, the client application 23 receives a processing result from a server 3, and processes displaying the processing result etc.

[0025] A server 3 is equipped with OS41, the name service 43, two or more server applications 45, etc. as shown in drawing 2 (B), and the storage section 31 mentioned above memorizes, and these are performed by the control section 33 etc. and realize each function. OS41 is software which controls and manages a fundamental processing operation of a server 3. A name service 43 is software which operates for example, on OS41, and is a control program which manages two or more server applications 45.

[0026] While the name service 43 manages registration, deletion, etc. of the predetermined information (following, management information) for managing each server application 45, when there is a processing request from a client 1, it assigns processing to the server application 45 which corresponds with reference to this management information. The management information of each server application 45 The storage section 31 memorizes, for example <A HREF = " / Tokujitu / tjitemdrw . ipdl ? N = 0000 = 239 & N = 0500 = one E = N / > = < > : > six = / & N = 0001 = 12 & N = 0552 = nine & N = 0553 = 000005 Data items, such as the "status" etc. which shows whether a "service name", a "version", and its server application 45 can be served, are included so that it may be shown.

[0027] If a name service 43 can be served with reference to the "status" in the management information of the server application 45 applicable to the "service name" which the processing request directs when a processing request is received from a client 1, it will start the server application 45 and will request processing. When there are two or more corresponding server applications 45 at this time, processing is requested from the direction in the status which can be served with reference to those "statuses" (namely, when there is two or more management information from which a "service name" is the same as that of, and a "version" is different). moreover, a "service name" — any of two or more same server applications 45 — although — processing is requested from any one server application 45 when it is in the status which can be served

[0028] Moreover, at the time of upgrade of a certain server application 45, a name service 43 registers management information of the new server application 45. The "status" is set up "during the service interruption", and when a service becomes possible, a setup is changed "during a service", until initialization processing of the new server application 45 etc. completes a name service 43 and it will be in the status which can be served at this time.

[0029] Moreover, when suspending use of a certain server application 45, a name service 43 deletes the management information of the server application 45. If the corresponding server application 45 becomes during activation at this time, it will be made not to assign a processing request after setting up the "status" of the management information "during a service interruption", and the corresponding management information will be deleted after a completion of processing of the server application 45.

[0030] Moreover, if the server application 45 is not started, and the management information is deleted and it is under activation when suspending the use henceforth about a certain server application 45, it sets up, while interrupting the status, it is made not to assign a future processing request, and management information will be deleted after completing processing.

[0031] Each server application 45 is a program for performing for example, operating processing, performs predetermined processing from a name service 43 according to designation, and returns a processing result to a name service 43.

[0032] In case this system renews server application 45 in a server 3 (upgrade etc.), it deletes and leaves the server application 45 of the existing version, and manages them for every version by the same service name. A continuous service provision becomes possible, without stopping the service to a client 1, since processing can be requested from the server application 45 of an old version by the same service name when this receives the processing request which specified the service name from the client 1 during upgrade of the server application 45 of a certain service name.

[0033] Hereafter, processing by the name service 43 of the server 3 which is this system-feature fraction is explained concretely. For example, as shown in drawing 4 , the processing request which specified the service name "Proc1" from the client application 23 of a client 1 is transmitted to a server 3 in the status that a service name "Proc1" and server application 45A of a version "A" are memorized by the server 3. At this time, the name service 43 of a server 3 requests processing from server application 45A of the service name "Proc1" registered into management information. According to this, server application 45A performs predetermined processing, and returns a processing result to a name service 43. A name service 43 is sent to the client application 23 of demand [ the processing result received from server application 45A ] origin.

[0034] Next, suppose that server application 45B (version "B") from which server application 45A and the version of a service name "Proc1" are different is newly included in a server 3. In this case, as shown in drawing 5 , although a name service 43 registers the management information of new server application 45B, the status is set up "during a service interruption" until it will be in the status which can serve this server application 45B (for example, initialization processing is completed). If the processing request which specified the service name "Proc1" from the client application 23 of a client 1 is transmitted to a server 3 at this time Although the name service 43 of a server 3 detects the server applications 45A and 45B of a service name "Proc1" with reference to management information Since the status of server application 45B is set up "during the service interruption" and the status of server application 45A is set up "during the service", a name service 43 requests processing from server application 45A. According to this, server application 45A performs predetermined processing, and returns a processing result to a name service 43. A name service 43 is sent to the client application 23 of demand [ the processing result received from server application 45A ] origin.

[0035] Next, suppose that a service of server application 45A is stopped and a service of new server application 45B is started for example, in the server applications 45A and 45B of the same service name "Proc1." In this case, as shown in drawing 6, in management information, a name service 43 carries out setting change of the status of server application 45A "during a service interruption", and carries out setting change of the status of server application 45B "during a service." When this receives the processing request which specified the service name "Proc1" from the client application 23, a name service 43 requests processing from server application 45B by which the status is set up "during the service" among the server applications 45A and 45B of a service name "Proc1." Moreover, in order not to request processing from server application 45A henceforth, a name service 43 deletes the management information of server application 45A. In addition, when server application 45A is performing at this time, management information is deleted after detecting a completion of the processing.

[0036] Thus, processing is requested from the existing server application 45 of the same service name, when the server application 45 is upgraded by the server 3 and the processing request from a client 1 is received, before incorporating the server application 45 of a new version and attaining the service of the server application 45 of a new version, with the existing server application 45 of the same service name left. Thereby, supply of a continuous service is attained also in the time of upgrade etc., without stopping supply of the service to a client 1.

[0037] Moreover, it becomes possible to make the server application 45 of the version which is different by the same service name live together by managing the version about each server application 45.

[0038] In addition, if the client application 23 specifies a service name and sends a processing request, although the name service 43 will have requested processing from the suitable server application 45 with reference to management information in the above-mentioned explanation, the client application 23 may enable it to specify a service name and a version. In this case, a name service 43 detects the server application 45 applicable to the service name and version which were specified with reference to management information, and requests processing from the server application 45.

[0039] Moreover, when the client application 23 specifies a service name and a version, it sets to a server 3. The inside of two or more server applications 45 with which a version is different by the same service name, respectively, The inside of the server application 45 of the service name specified by the processing request which registered the information about that compatible as a compatibility information, and was received from the client application 23. When there is nothing of the corresponding version, a name service 43 may be made to request processing from the server application 45 which is compatible with reference to this compatibility management information. This compatibility management information contains data items, such as a "service name", a "version", and a "compatible version" that shows the version of a certain thing of the server application 45 and compatibility, as shown in drawing 7.

[0040] Hereafter, processing by the name service 43 using the above-mentioned compatibility management information is concretely explained with reference to drawing 8. For example, suppose that the processing request which specified the service name "Proc2" and the version "A" from the client application 23 of a client 1 was transmitted to the server 3 in the status that a service name "Proc2", server application 45C of a version "A", a service name "Proc2" and server application 45D of a version "C", and \*\* are memorized by the server 3. In this case, the name service 43 of a server 3 confirms, with reference to management information, "the status of corresponding server application 45C (version "A")" "is giving its service", and requests processing from server application 45C.

[0041] moreover, when the processing request which specified the service name "Proc2" and the version "B" from the client application 23 is transmitted to a server 3 Since there is no management information of the server application 45 applicable to a processing request, the name service 43 of a server 3 With reference to compatibility management information, since the "compatible version" of a service name "Proc2" and the server application 45 of a version "B" is "C", processing is requested from a service name "Proc2" and server application 45D of a version "C."

[0042] in addition, either out of the server application 45 of a service name with which a name service 43 corresponds when there is no specification of a version in a processing request from the client application 23 (for example, when specifying a service name "Proc2") — arbitrary things are specified and it may be made to request processing Moreover, since the "compatible version" of a service name "Proc2" and server application 45C of a version "A" is set to the compatibility management information in drawing 8 with "C", when the processing request from the client application 23 specifies the service name "Proc2" and the version "A", you may request processing from server application 45D of a version "C."

[0043] Moreover, it is the server application 45 of the same service name, and in the status that the thing of an old version and the thing of a new version are made to live together, a name service 43 requests processing from the server application 45 of the version with old predetermined time, and may be made to request processing from a server 3 after it at the server application 45 of a new version.

[0044] Moreover, data structures, such as the above-mentioned management information and compatibility management information, the data format of each item, etc. are examples, and are not limited to this. For example, the transcription of a "version" is also arbitrary, and a numeric value may be used, and regular expressions, such as "version 1. [0-9], [0-9]", and "version 1.xx", may show versions (version) 1.00-1.99, and it may be made to indicate less than 2.00 version to be <version 2.00 etc.

[0045] In addition, the client/server system of this invention cannot be based on the system of exclusive use,

but can be realized using a usual computer system. For example, the client 1 and the server 3 which perform above-mentioned processing can be constituted by installing this program from the mediums (a floppy (registered trademark) disk, CD-ROM, etc.) which stored the program for performing an above-mentioned operation in the computer. In addition, when OS is realized [ of an assignment or OS, and application ], you may store an above-mentioned function only through fractions other than OS. Moreover, it is good also considering the function of the above-mentioned name service 43 as one function of OS.

[0046] Moreover, communication media (medium which holds a program temporarily like a communication line, a communication network, and communication system) are sufficient as the medium for supplying a program to a computer. For example, this program may be put up for the bulletin board (BBS) of a communication network, and this may be distributed through a network. And this program can be started and above-mentioned processing can be performed by performing like other application programs under a control of OS.

[0047]

[Effect of the invention] As explained above, according to this invention, the application of the same service name can be managed for every version, and it can know whether it is in the status which can serve each from the management information of each application. A continuous service provision becomes possible, without stopping the service to a client, since processing can be requested from the existing server application, even if the server application specified by the processing request from a client is in the status which cannot be served by the upgrade middle class by this.

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[Translation done.]

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**TECHNICAL FIELD**

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[The technical field to which invention belongs] this invention relates to the client/server system which makes predetermined application perform processing, a server, an application management method, etc. according to the processing request from a client.

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**PRIOR ART**

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[Prior art] Conventionally, in the client/server system, for example, the management of the server application performed in a server was performed using the service name (process name), and the processing request from a client also specifies this service name, and was made. In this case, in a server, application applicable to the service name which the processing request from a client specifies among two or more server applications memorized by the server is performed.

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**EFFECT OF THE INVENTION**

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[Effect of the invention] As explained above, according to this invention, the application of the same service name can be managed for every version, and it can know whether it is in the status which can serve each from the management information of each application. A continuous service provision becomes possible, without stopping the service to a client, since processing can be requested from the existing server application, even if the server application specified by the processing request from a client is in the status which cannot be served by the upgrade middle class by this.

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**TECHNICAL PROBLEM**

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[Object of the Invention] the case where the server application of the corresponding service name is starting in a server in the above systems when renewing predetermined server application (upgrade etc.) -- for example, the executive operation is suspended at once, server application is renewed, after a completion of renewal, new server application is started and a service is offered For this reason, there was a case where the service to a client was temporarily interrupted from a server.

[0004] Moreover, in renewal of predetermined server application, deletion etc. carries out the information on the existing server application from the management information for managing each server application, and new server application is registered into management information. Since server application became unable to perform temporarily at this time, the term which cannot provide a client with a service had occurred.

[0005] this invention was made in view of the situation mentioned above, and relates to the client/server system which can offer a continuous service also in the time of renewal of server application etc., a server, an application management method, etc.

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## MEANS

[The means for solving a technical problem] In order to attain the above-mentioned purpose, the client/server system concerning the 1st viewpoint of this invention It has a server and the client connected to this server by the network. each aforementioned client A predetermined service name is specified and a processing request is transmitted to the aforementioned server. the aforementioned server It is the client/server system which performs application corresponding to the service name specified by the processing request from the aforementioned client. the aforementioned server A storage means to memorize the application with which a version is different by the same service name, A management information storage means to memorize the management information containing the status information which shows whether it is the status which can serve a service name, a version information, and the concerned application about each application. The aforementioned management information is referred to according to the processing request which received from the aforementioned client. The application with which the status information which shows that it is in the status among the applications of the service name specified by this processing request which can be served is set up is equipped with a control means to request processing.

[0007] According to such a configuration, the application of the same service name can be managed for every version, and it can know whether it is in the status which can serve the application from the management information of each application. A continuous service provision becomes possible, without stopping the service to a client also in the status which the server application specified by the processing request from a client cannot serve by the upgrade middle class by this, since processing can be requested from the existing server application.

[0008] After the aforementioned control means of the aforementioned server sets the status information which shows that it is in the status which cannot serve as the concerned management information and will be in the status which can serve until it registers the management information of the application of this \*\*\*\* into the aforementioned management-information storage means and will be in the status which can serve the application of this \*\*\*\*, in case new application is memorized by the aforementioned storage means, it may equip with the means set up the status information which shows that it is in the status which can serve Processing can be requested from other server applications of the same service name, when the status information of the purport which a service is interrupting is set up and a processing request is received from a client in the meantime until the service of the application was attained in case new server application is built into this server thereby for example. And when the service of new server application is attained, setting change of the status information is carried out, and processing can be requested from new server application when a processing request is received from a client.

[0009] The aforementioned control means of the aforementioned server deletes the management information of this application, when the concerned application distinguishes whether it is under [ execution ] \*\*\*\*\* and it is not being performed [ be ], in case application is deleted from the aforementioned storage means, and in being under execution, while it sets the status information which shows that it is in the status which cannot be served as the management information of this application, after completing processing by this application, it may be further equipped with a means delete the management information of the concerned application.

[0010] The aforementioned server is further equipped with a means to memorize the compatibility management information which shows the application of other versions which are compatible with this application about each application, and in case the aforementioned control means of the aforementioned server specifies the application which requests processing, it may be further equipped with a means to specify application with reference to the aforementioned compatibility management information.

[0011] Moreover, the server concerning the 2nd viewpoint of this invention is connected by the client and network which specify a predetermined service name and transmit a processing request. A storage means to memorize the application with which it is the server which performs application corresponding to the service name specified by the processing request from the aforementioned client, and a version is different by the same service name. A management information storage means to memorize the management information containing the status information which shows whether it is the status which can serve a service name, a version information, and the concerned application about each application. The aforementioned management information is referred to according to the processing request which received from the aforementioned client. The application with which the status information which shows that it is in the status among the applications of the service name specified by this processing request which can be served is set up is equipped with a control means to request processing.

[0012] According to such a configuration, the application of the same service name can be managed for every version, and it can know whether it is in the status which can serve the application from the management information of each application. A continuous service provision becomes possible, without stopping the service to a client also in the status which the server application specified by the processing request from a client cannot serve by the upgrade middle class by this, since processing can be requested from the existing server application.

[0013] After the aforementioned control means sets the status information which shows that it is in the status which cannot be served as the concerned management information and will be in the status which can serve until it registers the management information of the application of this \*\*\*\* into the aforementioned management-information storage means and will be in the status which can serve the application of this \*\*\*\*, in case new application is memorized by the aforementioned storage means, it may be further equipped with a means set up the status information which shows that it is in the status which can serve.

[0014] The aforementioned control means deletes the management information of this application, when the concerned application distinguishes whether it is under [ execution ] \*\*\*\*\* and it is not being performed [ be / it ], in case application is deleted from the aforementioned storage means, and in being under execution, while it sets the status information which shows that it is in the status which cannot be served as the management information of this application, after completing processing by this application, it may be further equipped with a means delete the management information of the concerned application.

[0015] The aforementioned server may be further equipped with a means to memorize the compatibility management information which shows the application of other versions which are compatible with this application about each application, and in case the aforementioned control means specifies the application which requests processing, it may be further equipped with a means to specify application with reference to the aforementioned compatibility management information.

[0016] Moreover, the application management method concerning the 3rd viewpoint of this invention The client which specifies a predetermined service name and transmits a processing request, and the server which performs application corresponding to the service name specified by the processing request from the aforementioned client, While the application with which it is an application management method in a \*\*\*\*\* system, and a version is different by the same service name in the aforementioned server is memorized The storage step which memorizes the management information containing the status information which shows whether it is the status which can serve a service name, a version information, and the concerned application about each application, When the aforementioned server receives a processing request from the aforementioned client, the aforementioned management information is referred to. The application with which the status information which shows that it is in the status among the applications of the service name specified by this processing request which can be served is set up is equipped with the control step which requests processing.

[0017] According to such a configuration, the application of the same service name can be managed for every version, and it can know whether it is in the status which can serve the application from the management information of each application. A continuous service provision becomes possible, without stopping the service to a client also in the status which the server application specified by the processing request from a client cannot serve by the upgrade middle class by this, since processing can be requested from the existing server application.

[0018] Until the aforementioned control step registers the management information of the application of this \*\*\*\* and will be in the status which can serve the application of this \*\*\*\*, in case new application is memorized by the aforementioned server The new registration step which sets up the status information which shows that it is in the status which can be served after setting the status information which shows that it is in the status which cannot be served as the concerned management information and being in the status which can be served, In case application is deleted from the aforementioned server, in not being [ be / it ] under execution by the concerned application distinguishing whether it is under / execution / \*\*\*\*\* In being under execution by deleting the management information of this application While the status information which shows that it is in the status which cannot be served is set as the management information of this application, after completing processing by this application, at least the deletion step and one side of \*\* which delete the management information of the concerned application may also be included.

[0019] The aforementioned storage step may memorize further the compatibility management information which shows the application of other versions which are compatible with this application about each application, and in case the aforementioned control step specifies the application which requests processing, it may be further equipped with the step which specifies application with reference to the aforementioned compatibility management information.

[0020] Moreover, the record medium concerning the 4th viewpoint of this invention The client and network which specify a predetermined service name for a computer and transmit a processing request connect. It is the record medium which recorded the program for making it function as a server which performs application corresponding to the service name specified by the processing request from the aforementioned client and in which computer reading is possible. A storage means to memorize the application with which a version is different by the same service name in this computer, The management information containing the status information which shows whether it is the status which can serve a service name, a version information, and the concerned application about each application, The compatibility management information which shows the

application of other versions which are compatible with each application. It responds to the means feared the account of \*\*, and the processing request which received from the aforementioned client. A control means to request processing from the application of the service name specified by this processing request at least with reference to one side of the aforementioned management information and the aforementioned compatibility management information. Until it registers the management information of the application of this \*\*\*\* and it will be in the status which can serve the application of this \*\*\*\*, in case new application is memorized by the aforementioned server. The program for considering as a new registration means to set up the status information which shows that it is in the status which can be served, and making it function on the concerned management information, after setting up the status information which shows that it is in the status which cannot be served and being in the status which can be served is recorded.

[0021]

[Gestalt of implementation of invention] Hereafter, the client/server system concerning the gestalt of enforcement of this invention is explained with reference to a drawing. The block diagram of the client/server system concerning the gestalt of enforcement of this invention is shown in drawing 1. This system is equipped with the client 1 which consists of a personal computer, a work station, etc., and the server 3 connected to each client 1 by the network as shown in drawing 1.

[0022] A client 1 is equipped with the storage section 11, the control section 13, and the communications department 15. The storage section 11 memorizes various programs (OS, application, etc.), data, etc. which are started by the client 1. A control section 13 is for controlling the client 1 whole, for example, transmits a predetermined processing request to a server 3 through the communications department 15 according to the input to the input section by the user not to illustrate etc., and carries out a display etc. to the display which does not illustrate the processing result received from the server 3. The communications department 15 controls the communication between a client 1 and the server 3.

[0023] A server 3 is equipped with the storage section 31, the control section 33, and the communications department 35. The storage section 31 memorizes various programs (OS, application, etc.), data, etc. which are started by the server 3. It mentions later about a name service, the server application, etc. which are memorized by this storage section 31. Corresponding to the processing request which is for controlling the server 3 whole, for example, received from the client 1 through the network, a control section 33 starts a predetermined user program (server application), and transmits to the client 1 of the processing result demand origin. The communications department 35 controls the communication between a server 3 and each client 1.

[0024] Next, the client 1 in this client/server system and the software configuration of server 3 \*\* are shown in drawing 2. As shown in drawing 2 (A), the client 1 is equipped with OS21, the client application 23, etc., these are memorized by the storage section 11 mentioned above, a control section 13 etc. performs and each function is realized. OS21 controls and manages the fundamental processing operation in a client 1. The client application 23 is software which operates on OS21, for example, transmits a predetermined processing request to a server 3 according to the input designation from an user etc. In this processing request, the service name of the service (process) requested from a server 3 is specified. For example, in requesting a service of service-name "Proc1", it transmits the processing request of the content which specifies service-name "Proc1" to a server 3. Moreover, the client application 23 receives a processing result from a server 3, and processes displaying the processing result etc.

[0025] A server 3 is equipped with OS41, the name service 43, two or more server applications 45, etc. as shown in drawing 2 (B), and the storage section 31 mentioned above memorizes, and these are performed by the control section 33 etc. and realize each function. OS41 is software which controls and manages a fundamental processing operation of a server 3. A name service 43 is software which operates for example, on OS41, and is a control program which manages two or more server applications 45.

[0026] While the name service 43 managed registration, deletion, etc. of the predetermined information (following, management information) for managing each server application 45, when there is a processing request from a client 1, it assigns processing to the server application 45 which corresponds with reference to this management information. The management information of each server application 45 contains data items, such as the "status" etc. which shows whether a "service name", a "version", and its server application 45 can be served, as the storage section 31 memorizes, for example, it is shown in drawing 3.

[0027] If a name service 43 can be served with reference to the "status" in the management information of the server application 45 applicable to the "service name" which the processing request directs when a processing request is received from a client 1, it will start the server application 45 and will request processing. When there are two or more corresponding server applications 45 at this time, processing is requested from the direction in the status which can be served with reference to those "statuses" (namely, when there is two or more management information from which a "service name" is the same as that of, and a "version" is different). moreover, a "service name" — any of two or more same server applications 45 — although — processing is requested from any one server application 45 when it is in the status which can be served

[0028] Moreover, at the time of upgrade of a certain server application 45, a name service 43 registers management information of the new server application 45. The "status" is set up "during the service interruption", and when a service becomes possible, a setup is changed "during a service", until initialization processing of the new server application 45 etc. completes a name service 43 and it will be in the status which can be served at this time.

[0029] Moreover, when suspending use of a certain server application 45, a name service 43 deletes the

management information of the server application 45. If the corresponding server application 45 becomes during activation at this time, it will be made not to assign a processing request after setting up the "status" of the management information "during a service interruption", and the corresponding management information will be deleted after a completion of processing of the server application 45.

[0030] Moreover, if the server application 45 is not started, and the management information is deleted and it is under activation when suspending the use henceforth about a certain server application 45, it sets up, while interrupting the status, it is made not to assign a future processing request, and management information will be deleted after completing processing.

[0031] Each server application 45 is a program for performing for example, operating processing, performs predetermined processing from a name service 43 according to designation, and returns a processing result to a name service 43.

[0032] In case this system renews server application 45 in a server 3 (upgrade etc.), it deletes and leaves the server application 45 of the existing version, and manages them for every version by the same service name. A continuous service provision becomes possible, without stopping the service to a client 1, since processing can be requested from the server application 45 of an old version by the same service name when this receives the processing request which specified the service name from the client 1 during upgrade of the server application 45 of a certain service name.

[0033] Hereafter, processing by the name service 43 of the server 3 which is this system-feature fraction is explained concretely. For example, as shown in drawing 4, the processing request which specified the service name "Proc1" from the client application 23 of a client 1 is transmitted to a server 3 in the status that a service name "Proc1" and server application 45A of a version "A" are memorized by the server 3. At this time, the name service 43 of a server 3 requests processing from server application 45A of the service name "Proc1" registered into management information. According to this, server application 45A performs predetermined processing, and returns a processing result to a name service 43. A name service 43 is sent to the client application 23 of demand [ the processing result received from server application 45A ] origin.

[0034] Next, suppose that server application 45B (version "B") from which server application 45A and the version of a service name "Proc1" are different is newly included in a server 3. In this case, as shown in drawing 5, although a name service 43 registers the management information of new server application 45B, the status is set up "during a service interruption" until it will be in the status which can serve this server application 45B (for example, initialization processing is completed). If the processing request which specified the service name "Proc1" from the client application 23 of a client 1 is transmitted to a server 3 at this time. Although the name service 43 of a server 3 detects the server applications 45A and 45B of a service name "Proc1" with reference to management information. Since the status of server application 45B is set up "during the service interruption" and the status of server application 45A is set up "during the service", a name service 43 requests processing from server application 45A. According to this, server application 45A performs predetermined processing, and returns a processing result to a name service 43. A name service 43 is sent to the client application 23 of demand [ the processing result received from server application 45A ] origin.

[0035] Next, suppose that a service of server application 45A is stopped and a service of new server application 45B is started for example, in the server applications 45A and 45B of the same service name "Proc1." In this case, as shown in drawing 6, in management information, a name service 43 carries out setting change of the status of server application 45A "during a service interruption", and carries out setting change of the status of server application 45B "during a service." When this receives the processing request which specified the service name "Proc1" from the client application 23, a name service 43 requests processing from server application 45B by which the status is set up "during the service" among the server applications 45A and 45B of a service name "Proc1." Moreover, in order not to request processing from server application 45A henceforth, a name service 43 deletes the management information of server application 45A. In addition, when server application 45A is performing at this time, management information is deleted after detecting a completion of the processing.

[0036] Thus, processing is requested from the existing server application 45 of the same service name, when the server application 45 is upgraded by the server 3 and the processing request from a client 1 is received, before incorporating the server application 45 of a new version and attaining the service of the server application 45 of a new version, with the existing server application 45 of the same service name left. Thereby, supply of a continuous service is attained also in the time of upgrade etc., without stopping supply of the service to a client 1.

[0037] Moreover, it becomes possible to make the server application 45 of the version which is different by the same service name live together by managing the version about each server application 45.

[0038] In addition, if the client application 23 specifies a service name and sends a processing request, although the name service 43 will have requested processing from the suitable server application 45 with reference to management information in the above-mentioned explanation, the client application 23 may enable it to specify a service name and a version. In this case, a name service 43 detects the server application 45 applicable to the service name and version which were specified with reference to management information, and requests processing from the server application 45.

[0039] Moreover, when the client application 23 specifies a service name and a version, it sets to a server 3. The inside of two or more server applications 45 with which a version is different by the same service name, respectively. The inside of the server application 45 of the service name specified by the processing request

which registered the information about that compatible as a compatibility information, and was received from the client application 23; When there is nothing of the corresponding version, a name service 43 may be made to request processing from the server application 45 which is compatible with reference to this compatibility management information. This compatibility management information contains data items, such as a "service name", a "version", and a "compatible version" that shows the version of a certain thing of the server application 45 and compatibility, as shown in drawing 7.

[0040] Hereafter, processing by the name service 43 using the above-mentioned compatibility management information is concretely explained with reference to drawing 8. For example, suppose that the processing request which specified the service name "Proc2" and the version "A" from the client application 23 of a client 1 was transmitted to the server 3 in the status that a service name "Proc2", server application 45C of a version "A", a service name "Proc2" and server application 45D of a version "C", and \*\* are memorized by the server 3. In this case, the name service 43 of a server 3 confirms, with reference to management information, "the status of corresponding server application 45C (version "A")" "is giving its service", and requests processing from server application 45C.

[0041] moreover, when the processing request which specified the service name "Proc2" and the version "B" from the client application 23 is transmitted to a server 3 Since there is no management information of the server application 45 applicable to a processing request, the name service 43 of a server 3 With reference to compatibility management information, since the "compatible version" of a service name "Proc2" and the server application 45 of a version "B" is "C", processing is requested from a service name "Proc2" and server application 45D of a version "C."

[0042] in addition, either out of the server application 45 of a service name with which a name service 43 corresponds when there is no specification of a version in a processing request from the client application 23 (for example, when specifying a service name "Proc2") — arbitrary things are specified and it may be made to request processing Moreover, since the "compatible version" of a service name "Proc2" and server application 45C of a version "A" is set to the compatibility management information in drawing 8 with "C", when the processing request from the client application 23 specifies the service name "Proc2" and the version "A", you may request processing from server application 45D of a version "C."

[0043] Moreover, it is the server application 45 of the same service name, and in the status that the thing of an old version and the thing of a new version are made to live together, a name service 43 requests processing from the server application 45 of the version with old predetermined time, and may be made to request processing from a server 3 after it at the server application 45 of a new version.

[0044] Moreover, data structures, such as the above-mentioned management information and compatibility management information, the data format of each item, etc. are examples, and are not limited to this. For example, the transcription of a "version" is also arbitrary, and a numeric value may be used, and regular expressions, such as "version 1. [0-9], [0-9]", and "version 1.xx", may show versions (version) 1.00-1.99, and it may be made to indicate less than 2.00 version to be <version 2.00 etc.

[0045] In addition, the client/server system of this invention cannot be based on the system of exclusive use, but can be realized using a usual computer system. For example, the client 1 and the server 3 which perform above-mentioned processing can be constituted by installing this program from the mediums (a floppy (registered trademark) disk, CD-ROM, etc.) which stored the program for performing an above-mentioned operation in the computer. In addition, when OS is realized [ of an assignment or OS, and application ], you may store an above-mentioned function only through fractions other than OS. Moreover, it is good also considering the function of the above-mentioned name service 43 as one function of OS.

[0046] Moreover, communication media (medium which holds a program temporarily like a communication line, a communication network, and communication system) are sufficient as the medium for supplying a program to a computer. For example, this program may be put up for the bulletin board (BBS) of a communication network, and this may be distributed through a network. And this program can be started and above-mentioned processing can be performed by performing like other application programs under a control of OS.

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**DESCRIPTION OF DRAWINGS**

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[An easy explanation of a drawing]

[Drawing 1] It is drawing showing typically the configuration of the client/server system concerning the gestalt of enforcement of this invention.

[Drawing 2] It is drawing showing an example of the software configuration of the client/server system of drawing 1.

[Drawing 3] It is drawing for explaining an example of the data configuration of management information.

[Drawing 4] It is drawing for explaining processing by the name service.

[Drawing 5] It is drawing for explaining processing by the name service at the time of new server application being incorporated.

[Drawing 6] It is drawing for explaining processing by the name service at the time of stopping the processing request to the existing server application.

[Drawing 7] It is drawing for explaining an example of the data configuration of compatibility management information.

[Drawing 8] It is drawing for explaining processing by the name service using compatibility management information.

[An explanation of a sign]

1 Client

3 Server

11 Storage Section

13 Control Section

15 Communications Department

21 OS

23 Client Application

31 Storage Section

33 Control Section

35 Communications Department

41 OS

43 Name Service

45 Server Application

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[Translation done.]

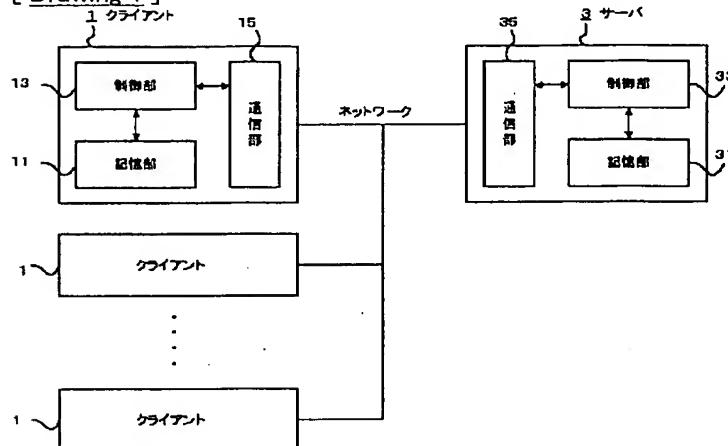
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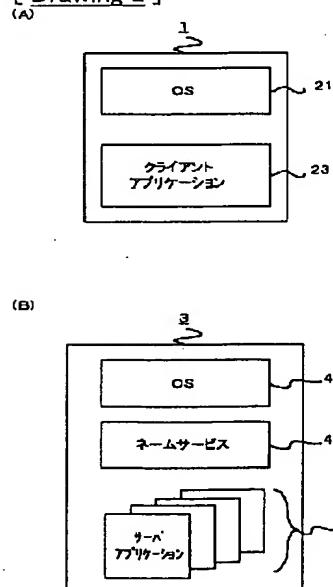
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## DRAWINGS

## [ Drawing 1 ]



## [ Drawing 2 ]



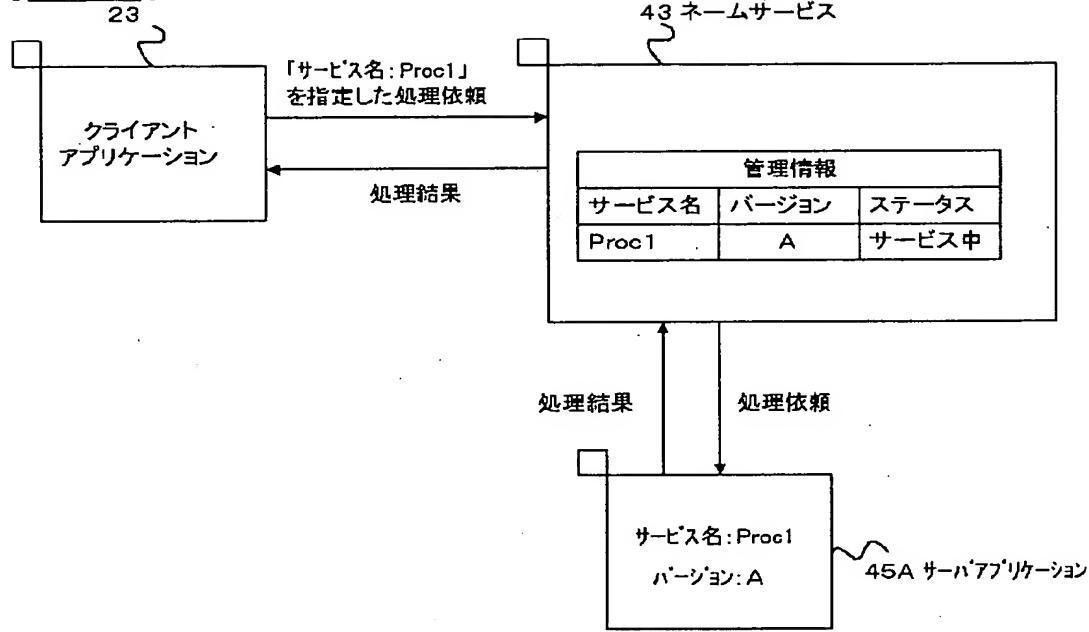
## [ Drawing 3 ]

| 管 理 情 報 |       |         |
|---------|-------|---------|
| サービス名   | バージョン | ステータス   |
| Proc1   | A     | サービス中   |
| Proc1   | B     | サービス中断中 |
| ⋮       | ⋮     | ⋮       |
| ⋮       | ⋮     | ⋮       |
| ⋮       | ⋮     | ⋮       |

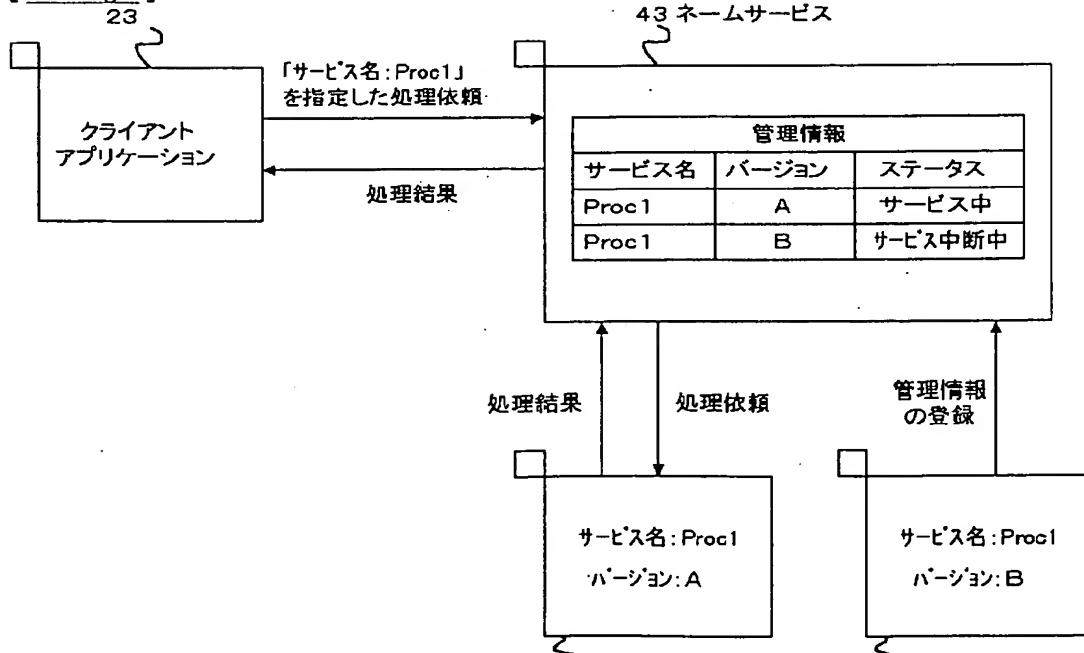
[ Drawing 7 ]

| 互換性管理情報 |       |         |
|---------|-------|---------|
| サービス名   | バージョン | 互換バージョン |
| Proc1   | A     | C       |
| Proc1   | B     | C       |
| Proc1   | C     |         |
| ⋮       | ⋮     | ⋮       |
| ⋮       | ⋮     | ⋮       |
| ⋮       | ⋮     | ⋮       |
| ⋮       | ⋮     | ⋮       |

[ Drawing 4 ]



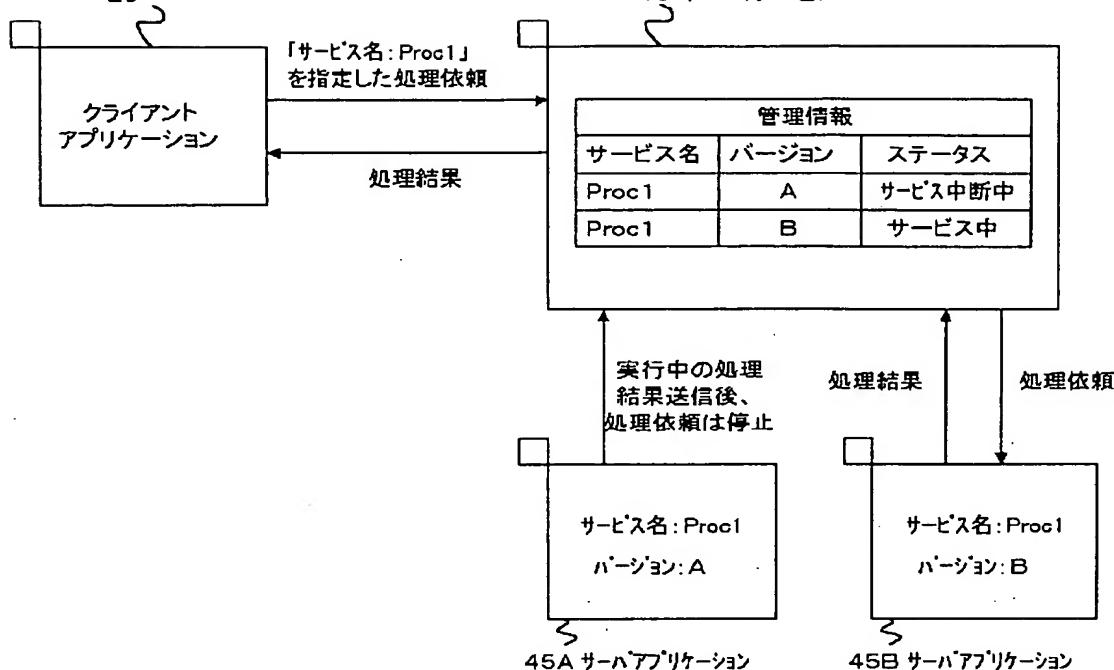
[ Drawing 5 ]



## 45A サーバーアプリケーション 45B サーバーアプリケーション

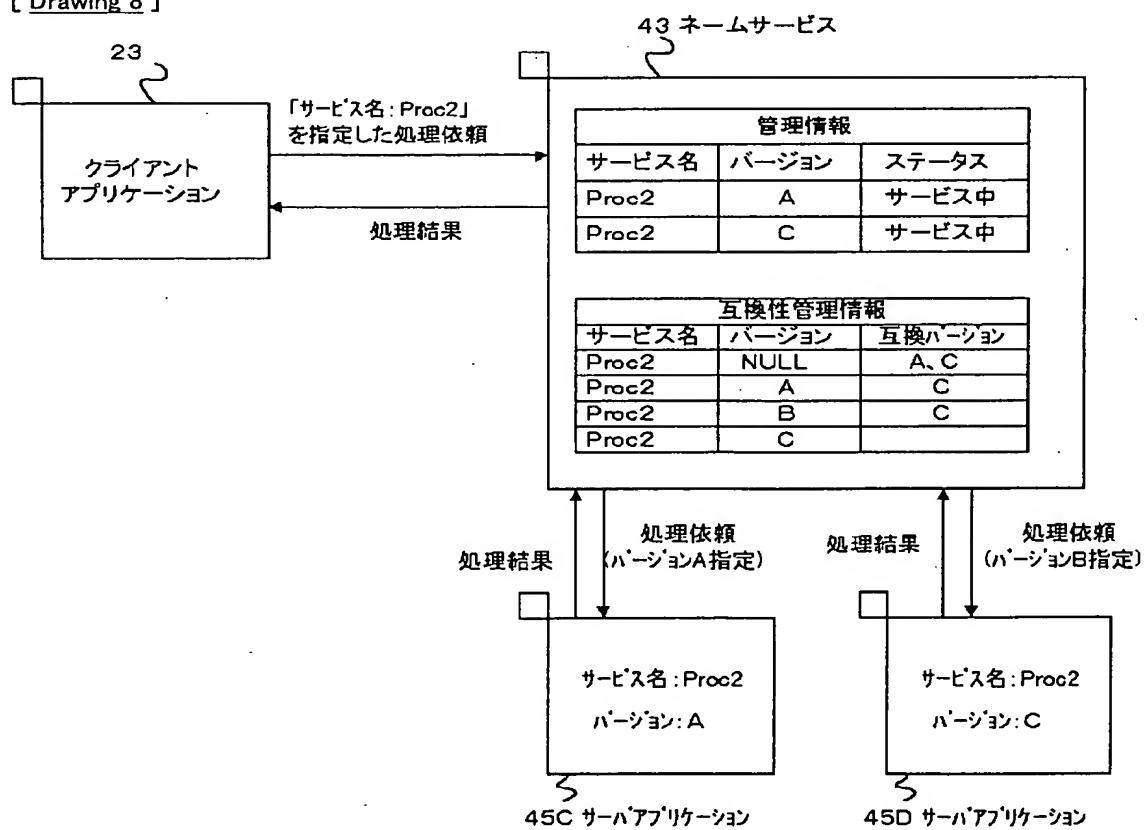
## [ Drawing 6 ]

23



## [ Drawing 8 ]

23



[Translation done.]

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| 13/00                     | 3 5 7 | 13/00        | 3 5 7 Z           |

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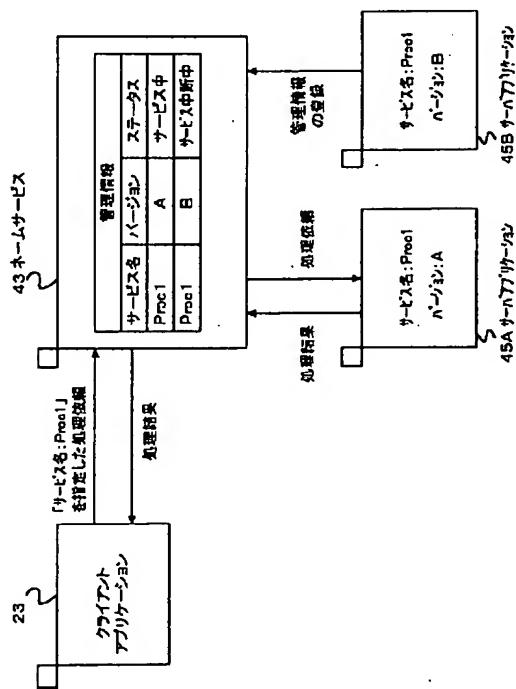
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5B089 GA11 GA21 GB02 GB09 JB15  
KA10 KB09  
5B098 AA10 GA01 GC01 GC16

(54)【発明の名称】 クライアントサーバシステム、サーバ、アプリケーション管理方法及び記録媒体

## (57)【要約】

【課題】 サーバアプリケーションの更改時等においても継続的なサービスを提供できるクライアントサーバシステム等を提供する。

【解決手段】 サーバには、同一のサービス名でバージョンの異なるサーバアプリケーションと、各サーバアプリケーションについて、サービス名とバージョン情報とサーバアプリケーションがサービス可能な状態か否かを示すステータス情報を含む管理情報と、が記憶される。サーバにおけるネームサービス43は、クライアントにおけるクライアントアプリケーション23からの処理依頼に応じて、管理情報を参照し、処理依頼により指定されたサービス名のサーバアプリケーションのうち、サービス可能な状態であることを示すステータス情報が設定されているサーバアプリケーション45Aに処理を依頼する。



## 【特許請求の範囲】

【請求項1】サーバと、該サーバにネットワークにより接続されるクライアントと、を備え、各前記クライアントは、所定のサービス名を指定して前記サーバに処理依頼を送信し、前記サーバは、前記クライアントからの処理依頼により指定されたサービス名に対応するアプリケーションを実行させるクライアントサーバシステムであって、

前記サーバは、

同一のサービス名でバージョンの異なるアプリケーションを記憶する記憶手段と、

各アプリケーションについて、サービス名とバージョン情報と当該アプリケーションがサービス可能な状態か否かを示すステータス情報を含む管理情報を記憶する管理情報記憶手段と、

前記クライアントから受信した処理依頼に応じて、前記管理情報を参照し、該処理依頼により指定されたサービス名のアプリケーションのうち、サービス可能な状態であることを示すステータス情報を設定しているアプリケーションに処理を依頼する制御手段と、

を備えることを特徴とするクライアントサーバシステム。

【請求項2】前記サーバの前記制御手段は、新規のアプリケーションが前記記憶手段に記憶される際、該新規のアプリケーションの管理情報を前記管理情報記憶手段に登録し、該新規のアプリケーションがサービス可能な状態となるまで、当該管理情報に、サービス不可能な状態であることを示すステータス情報を設定し、サービス可能な状態となった後に、サービス可能な状態であることを示すステータス情報を設定する手段をさらに備える、ことを特徴とする請求項1に記載のクライアントサーバシステム。

【請求項3】前記サーバの前記制御手段は、前記記憶手段からアプリケーションが削除される際に、当該アプリケーションが実行中か否かを判別し、実行中でない場合には、該アプリケーションの管理情報を削除し、実行中である場合には、該アプリケーションの管理情報に、サービス不可能な状態であることを示すステータス情報を設定するとともに、該アプリケーションによる処理が完了した後に当該アプリケーションの管理情報を削除する手段をさらに備える、

ことを特徴とする請求項1又は2に記載のクライアントサーバシステム。

【請求項4】前記サーバは、各アプリケーションについて、該アプリケーションと互換性のある他のバージョンのアプリケーションを示す互換性管理情報を記憶する手段をさらに備え、

前記サーバの前記制御手段は、処理を依頼するアプリケーションを特定する際、前記互換性管理情報を参照してアプリケーションを特定する手段をさらに備える、

ことを特徴とする請求項1乃至3のいずれか1項に記載のクライアントサーバシステム。

【請求項5】所定のサービス名を指定して処理依頼を送信するクライアントとネットワークにより接続され、前記クライアントからの処理依頼により指定されたサービス名に対応するアプリケーションを実行させるサーバであって、

同一のサービス名でバージョンの異なるアプリケーションを記憶する記憶手段と、

各アプリケーションについて、サービス名とバージョン情報と当該アプリケーションがサービス可能な状態か否かを示すステータス情報を含む管理情報を記憶する管理情報記憶手段と、

前記クライアントから受信した処理依頼に応じて、前記管理情報を参照し、該処理依頼により指定されたサービス名のアプリケーションのうち、サービス可能な状態であることを示すステータス情報を設定しているアプリケーションに処理を依頼する制御手段と、

を備えることを特徴とするサーバ。

【請求項6】前記制御手段は、新規のアプリケーションが前記記憶手段に記憶される際、該新規のアプリケーションの管理情報を前記管理情報記憶手段に登録し、該新規のアプリケーションがサービス可能な状態となるまで、当該管理情報に、サービス不可能な状態であることを示すステータス情報を設定し、サービス可能な状態となった後に、サービス可能な状態であることを示すステータス情報を設定する手段をさらに備える、

ことを特徴とする請求項5に記載のサーバ。

【請求項7】前記制御手段は、前記記憶手段からアプリケーションが削除される際に、当該アプリケーションが実行中か否かを判別し、実行中でない場合には、該アプリケーションの管理情報を削除し、実行中である場合には、該アプリケーションの管理情報に、サービス不可能な状態であることを示すステータス情報を設定するとともに、該アプリケーションによる処理が完了した後に当該アプリケーションの管理情報を削除する手段をさらに備える、

ことを特徴とする請求項5又は6に記載のサーバ。

【請求項8】前記サーバは、各アプリケーションについて、該アプリケーションと互換性のある他のバージョンのアプリケーションを示す互換性管理情報を記憶する手段をさらに備え、

前記制御手段は、処理を依頼するアプリケーションを特定する際、前記互換性管理情報を参照してアプリケーションを特定する手段をさらに備える、

ことを特徴とする請求項5乃至7のいずれか1項に記載のサーバ。

【請求項9】所定のサービス名を指定して処理依頼を送信するクライアントと、前記クライアントからの処理依頼により指定されたサービス名に対応するアプリケーシ

ョンを実行させるサーバと、を備えるシステムにおけるアプリケーション管理方法であって、

前記サーバにおいて、同一のサービス名でバージョンの異なるアプリケーションを記憶するとともに、各アプリケーションについて、サービス名とバージョン情報と当該アプリケーションがサービス可能な状態か否かを示すステータス情報を記憶する記憶ステップと、

前記サーバが前記クライアントから処理依頼を受信したときに、前記管理情報を参照し、該処理依頼により指定されたサービス名のアプリケーションのうち、サービス可能な状態であることを示すステータス情報が設定されているアプリケーションに処理を依頼する制御ステップと、

を備えることを特徴とするアプリケーション管理方法。

【請求項10】前記制御ステップは、

新規のアプリケーションが前記サーバに記憶される際に、該新規のアプリケーションの管理情報を登録し、該新規のアプリケーションがサービス可能な状態となるまで、当該管理情報に、サービス不可能な状態であることを示すステータス情報を設定し、サービス可能な状態となつた後に、サービス可能な状態であることを示すステータス情報を設定する新規登録ステップと、

前記サーバからアプリケーションが削除される際に、当該アプリケーションが実行中か否かを判別し、実行中でない場合には、該アプリケーションの管理情報を削除し、実行中である場合には、該アプリケーションの管理情報に、サービス不可能な状態であることを示すステータス情報を設定するとともに、該アプリケーションによる処理が完了した後に当該アプリケーションの管理情報を削除する削除ステップと、

の少なくとも一方を含むことを特徴とする請求項9に記載のアプリケーション管理方法。

【請求項11】前記記憶ステップは、各アプリケーションについて、該アプリケーションと互換性のある他のバージョンのアプリケーションを示す互換性管理情報をさらに記憶し、

前記制御ステップは、処理を依頼するアプリケーションを特定する際、前記互換性管理情報を参照してアプリケーションを特定するステップをさらに備える、

ことを特徴とする請求項9又は10に記載のアプリケーション管理方法。

【請求項12】コンピュータを、所定のサービス名を指定して処理依頼を送信するクライアントとネットワークにより接続され、前記クライアントからの処理依頼により指定されたサービス名に対応するアプリケーションを実行させるサーバとして機能させるためのプログラムを記録したコンピュータ読み取り可能な記録媒体であつて、該コンピュータを、

同一のサービス名でバージョンの異なるアプリケーションを記憶する記憶手段、

各アプリケーションについて、サービス名とバージョン情報と当該アプリケーションがサービス可能な状態か否かを示すステータス情報を記憶する記憶手段、

前記クライアントから受信した処理依頼に応じて、前記管理情報を参照し、該処理依頼により指定されたサービス名のアプリケーションに処理を依頼する制御手段、

新規のアプリケーションが前記サーバに記憶される際に、該新規のアプリケーションの管理情報を登録し、該新規のアプリケーションがサービス可能な状態となるまで、当該管理情報に、サービス不可能な状態であることを示すステータス情報を設定し、サービス可能な状態となつた後に、サービス可能な状態であることを示すステータス情報を設定する新規登録手段、

として機能させるためのプログラムを記録したコンピュータ読み取り可能な記録媒体。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、クライアントからの処理依頼に応じて、所定のアプリケーションに処理を実行させるクライアントサーバシステム、サーバ、アプリケーション管理方法等に関する。

【0002】

【従来の技術】従来、クライアントサーバシステムでは、例えば、サーバにおいて実行されるサーバアプリケーションの管理は、サービス名（プロセス名）を用いて行われており、クライアントからの処理依頼もこのサービス名を指定してなされていた。この場合、サーバでは、サーバに記憶されている複数のサーバアプリケーションのうち、クライアントからの処理依頼が指定するサービス名に該当するアプリケーションが実行される。

【0003】

【発明が解決しようとする課題】上記のようなシステムでは、サーバにおいて、所定のサーバアプリケーションを更改（バージョンアップ等）するとき、該当するサービス名のサーバアプリケーションが起動中である場合には、例えば、その実行処理を一度停止して、サーバアプリケーションの更改を行い、更改の完了後に新たなサーバアプリケーションを起動してサービスを提供する。このため、サーバからクライアントへのサービスが一時的に中断される場合があった。

【0004】また、所定のサーバアプリケーションの更改では、各サーバアプリケーションを管理するための管理情報を登録する。このとき、サーバアプリケーションが一時的に

実行できなくなるため、クライアントにサービスを提供できない期間が発生していた。

【0005】本発明は、上述した事情に鑑みてなされたもので、サーバアプリケーションの更改時等においても継続的なサービスを提供できるクライアントサーバシステム、サーバ、アプリケーション管理方法等に関する。

【0006】

【課題を解決するための手段】上記目的を達成するため、本発明の第1の観点に係るクライアントサーバシステムは、サーバと、該サーバにネットワークにより接続されるクライアントと、を備え、各前記クライアントは、所定のサービス名を指定して前記サーバに処理依頼を送信し、前記サーバは、前記クライアントからの処理依頼により指定されたサービス名に対応するアプリケーションを実行させるクライアントサーバシステムであって、前記サーバは、同一のサービス名でバージョンの異なるアプリケーションを記憶する記憶手段と、各アプリケーションについて、サービス名とバージョン情報と当該アプリケーションがサービス可能な状態か否かを示すステータス情報を含む管理情報を記憶する管理情報記憶手段と、前記クライアントから受信した処理依頼に応じて、前記管理情報を参照し、該処理依頼により指定されたサービス名のアプリケーションのうち、サービス可能な状態であることを示すステータス情報が設定されているアプリケーションに処理を依頼する制御手段と、を備える。

【0007】このような構成によれば、同一のサービス名のアプリケーションをバージョン毎に管理し、各アプリケーションの管理情報をからそのアプリケーションがサービス可能な状態であるか否かを知ることができる。これにより、クライアントからの処理依頼により指定されたサーバアプリケーションがバージョンアップ中等でサービスできない状況でも、既存のサーバアプリケーションに処理を依頼することができるため、クライアントへのサービスを停止することなく、継続的なサービス提供が可能となる。

【0008】前記サーバの前記制御手段は、新規のアプリケーションが前記記憶手段に記憶される際、該新規のアプリケーションの管理情報を前記管理情報記憶手段に登録し、該新規のアプリケーションがサービス可能な状態となるまで、当該管理情報に、サービス不可能な状態であることを示すステータス情報を設定し、サービス可能な状態となった後に、サービス可能な状態であることを示すステータス情報を設定する手段をさらに備えてもよい。これにより、例えば、新規のサーバアプリケーションが該サーバに組み込まれる際に、そのアプリケーションがサービス可能となるまでは、サービスが中断中である旨のステータス情報を設定しておき、この間にクライアントから処理依頼を受けた場合には、同一サービス名の他のサーバアプリケーションに処理を依頼するよう

にできる。そして、新規のサーバアプリケーションがサービス可能となった場合には、ステータス情報を設定変更して、クライアントから処理依頼を受けた場合、新規のサーバアプリケーションに処理を依頼するようにできる。

【0009】前記サーバの前記制御手段は、前記記憶手段からアプリケーションが削除される際に、当該アプリケーションが実行中か否かを判別し、実行中でない場合には、該アプリケーションの管理情報を削除し、実行中である場合には、該アプリケーションの管理情報に、サービス不可能な状態であることを示すステータス情報を設定するとともに、該アプリケーションによる処理が完了した後に当該アプリケーションの管理情報を削除する手段をさらに備えてもよい。

【0010】前記サーバは、各アプリケーションについて、該アプリケーションと互換性のある他のバージョンのアプリケーションを示す互換性管理情報を記憶する手段をさらに備え、前記サーバの前記制御手段は、処理を依頼するアプリケーションを特定する際、前記互換性管理情報を参照してアプリケーションを特定する手段をさらに備えてもよい。

【0011】また、本発明の第2の観点に係るサーバは、所定のサービス名を指定して処理依頼を送信するクライアントとネットワークにより接続され、前記クライアントからの処理依頼により指定されたサービス名に対応するアプリケーションを実行させるサーバであって、同一のサービス名でバージョンの異なるアプリケーションを記憶する記憶手段と、各アプリケーションについて、サービス名とバージョン情報と当該アプリケーションがサービス可能な状態か否かを示すステータス情報を含む管理情報を記憶する管理情報記憶手段と、前記クライアントから受信した処理依頼に応じて、前記管理情報を参照し、該処理依頼により指定されたサービス名のアプリケーションのうち、サービス可能な状態であることを示すステータス情報が設定されているアプリケーションに処理を依頼する制御手段と、を備える。

【0012】このような構成によれば、同一のサービス名のアプリケーションをバージョン毎に管理し、各アプリケーションの管理情報をからそのアプリケーションがサービス可能な状態であるか否かを知ることができる。これにより、クライアントからの処理依頼により指定されたサーバアプリケーションがバージョンアップ中等でサービスできない状況でも、既存のサーバアプリケーションに処理を依頼することができるため、クライアントへのサービスを停止することなく、継続的なサービス提供が可能となる。

【0013】前記制御手段は、新規のアプリケーションが前記記憶手段に記憶される際、該新規のアプリケーションの管理情報を前記管理情報記憶手段に登録し、該新規のアプリケーションがサービス可能な状態となるま

で、当該管理情報に、サービス不可能な状態であることを示すステータス情報を設定し、サービス可能な状態となつた後に、サービス可能な状態であることを示すステータス情報を設定する手段をさらに備えてもよい。

【0014】前記制御手段は、前記記憶手段からアプリケーションが削除される際に、当該アプリケーションが実行中か否かを判別し、実行中でない場合には、該アプリケーションの管理情報を削除し、実行中である場合には、該アプリケーションの管理情報に、サービス不可能な状態であることを示すステータス情報を設定するとともに、該アプリケーションによる処理が完了した後に当該アプリケーションの管理情報を削除する手段をさらに備えてもよい。

【0015】前記サーバは、各アプリケーションについて、該アプリケーションと互換性のある他のバージョンのアプリケーションを示す互換性管理情報を記憶する手段をさらに備えてもよく、前記制御手段は、処理を依頼するアプリケーションを特定する際、前記互換性管理情報を参照してアプリケーションを特定する手段をさらに備えてもよい。

【0016】また、本発明の第3の観点に係るアプリケーション管理方法は、所定のサービス名を指定して処理依頼を送信するクライアントと、前記クライアントからの処理依頼により指定されたサービス名に対応するアプリケーションを実行させるサーバと、を備えるシステムにおけるアプリケーション管理方法であって、前記サーバにおいて、同一のサービス名でバージョンの異なるアプリケーションを記憶するとともに、各アプリケーションについて、サービス名とバージョン情報と当該アプリケーションがサービス可能な状態か否かを示すステータス情報を含む管理情報を記憶する記憶ステップと、前記サーバが前記クライアントから処理依頼を受信したときに、前記管理情報を参照し、該処理依頼により指定されたサービス名のアプリケーションのうち、サービス可能な状態であることを示すステータス情報を設定しているアプリケーションに処理を依頼する制御ステップと、を備える。

【0017】このような構成によれば、同一のサービス名のアプリケーションをバージョン毎に管理し、各アプリケーションの管理情報をからそのアプリケーションがサービス可能な状態であるか否かを知ることができる。これにより、クライアントからの処理依頼により指定されたサーバアプリケーションがバージョンアップ中等でサービスできない状況でも、既存のサーバアプリケーションに処理を依頼することができるため、クライアントへのサービスを停止することなく、継続的なサービス提供が可能となる。

【0018】前記制御ステップは、新規のアプリケーションが前記サーバに記憶される際に、該新規のアプリケーションの管理情報を登録し、該新規のアプリケーショ

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ンがサービス可能な状態となるまで、当該管理情報に、サービス不可能な状態であることを示すステータス情報を設定し、サービス可能な状態となつた後に、サービス可能な状態であることを示すステータス情報を設定する新規登録ステップと、前記サーバからアプリケーションが削除される際に、当該アプリケーションが実行中か否かを判別し、実行中でない場合には、該アプリケーションの管理情報を削除し、実行中である場合には、該アプリケーションの管理情報に、サービス不可能な状態であることを示すステータス情報を設定するとともに、該アプリケーションによる処理が完了した後に当該アプリケーションの管理情報を削除する削除ステップと、の少なくとも一方を含んでもよい。

【0019】前記記憶ステップは、各アプリケーションについて、該アプリケーションと互換性のある他のバージョンのアプリケーションを示す互換性管理情報をさらに記憶してもよく、前記制御ステップは、処理を依頼するアプリケーションを特定する際、前記互換性管理情報を参照してアプリケーションを特定するステップをさらに備えてもよい。

【0020】また、本発明の第4の観点に係る記録媒体は、コンピュータを、所定のサービス名を指定して処理依頼を送信するクライアントとネットワークにより接続され、前記クライアントからの処理依頼により指定されたサービス名に対応するアプリケーションを実行させるサーバとして機能させるためのプログラムを記録したコンピュータ読み取り可能な記録媒体であって、該コンピュータを、同一のサービス名でバージョンの異なるアプリケーションを記憶する記憶手段、各アプリケーションについて、サービス名とバージョン情報と当該アプリケーションがサービス可能な状態か否かを示すステータス情報を含む管理情報と、各アプリケーションと互換性のある他のバージョンのアプリケーションを示す互換性管理情報と、を記憶する手段、前記クライアントから受信した処理依頼に応じて、前記管理情報と前記互換性管理情報の少なくとも一方を参照し、該処理依頼により指定されたサービス名のアプリケーションに処理を依頼する制御手段、新規のアプリケーションが前記サーバに記憶される際に、該新規のアプリケーションの管理情報を登録し、該新規のアプリケーションがサービス可能な状態となるまで、当該管理情報に、サービス不可能な状態であることを示すステータス情報を設定し、サービス可能な状態となつた後に、サービス可能な状態であることを示すステータス情報を設定する新規登録手段、として機能させるためのプログラムを記録する。

【0021】

【発明の実施の形態】以下、本発明の実施の形態に係るクライアントサーバシステムについて図面を参照して説明する。本発明の実施の形態に係るクライアントサーバシステムの構成図を図1に示す。本システムは、図1に

示すように、パーソナルコンピュータ、ワークステーション等からなるクライアント1と、各クライアント1にネットワークにより接続されるサーバ3と、を備える。

【0022】クライアント1は、記憶部11と、制御部13と、通信部15と、を備える。記憶部11は、クライアント1で起動される種々のプログラム(OS、アプリケーション等)、データ等を記憶する。制御部13は、グライアント1全体の制御を行うためのものであり、例えばユーザによる図示せぬ入力部への入力等に応じて、サーバ3に所定の処理依頼を通信部15を介して送信し、サーバ3から受信した処理結果を図示せぬ表示部に表示等する。通信部15は、クライアント1とサーバ3との間の通信を制御する。

【0023】サーバ3は、記憶部31と、制御部33と、通信部35と、を備える。記憶部31は、サーバ3で起動される種々のプログラム(OS、アプリケーション等)、データ等を記憶する。この記憶部31に記憶されているネームサービス、サーバアプリケーション等については後述する。制御部33は、サーバ3全体の制御を行うためのものであり、例えばネットワークを介してクライアント1から受信した処理依頼に応じて、例えば所定の業務プログラム(サーバアプリケーション)を起動し、その処理結果を要求元のクライアント1に送信する。通信部35は、サーバ3と各クライアント1との間の通信を制御する。

【0024】次に、このクライアントサーバシステムにおけるクライアント1とサーバ3のソフトウェア構成を図2に示す。図2(A)に示すように、クライアント1は、OS21、クライアントアプリケーション23等を備えており、これらは上述した記憶部11に記憶されており、制御部13等により実行されて各機能を実現する。OS21は、クライアント1における基本的処理動作を制御・管理する。クライアントアプリケーション23は、OS21上で動作するソフトウェアであり、例えばユーザからの入力指示等に応じて、サーバ3へ所定の処理依頼を送信する。この処理依頼では、サーバ3に依頼するサービス(プロセス)のサービス名を指定する。例えば、サービス名"Proc1"のサービスを依頼する場合には、サービス名"Proc1"を指定する内容の処理依頼をサーバ3に送信する。また、クライアントアプリケーション23は、サーバ3から処理結果を受信し、その処理結果を表示する等の処理を行う。

【0025】サーバ3は、図2(B)に示すように、OS41、ネームサービス43、複数のサーバアプリケーション45等を備え、これらは上述した記憶部31に記憶されており、制御部33等により実行されて各機能を実現する。OS41は、サーバ3の基本的処理動作を制御・管理するソフトウェアである。ネームサービス43は、例えばOS41上で動作するソフトウェアであり、複数のサーバアプリケーション45の管理を行う制御ブ

ログラムである。

【0026】ネームサービス43は、各サーバアプリケーション45を管理するための所定情報(以下、管理情報)の登録・削除等の管理を行うとともに、クライアント1から処理依頼があったときには、この管理情報を参照して該当するサーバアプリケーション45に処理を割り振る。各サーバアプリケーション45の管理情報は、記憶部31に記憶され、例えば、図3に示すように、「サービス名」、「バージョン」、そのサーバアプリケーション45がサービス可能であるかを示す「ステータス」等のデータ項目を含む。

【0027】ネームサービス43は、クライアント1から処理依頼を受け取ったとき、その処理依頼が指示する「サービス名」に該当するサーバアプリケーション45の管理情報中の「ステータス」を参照し、サービス可能であるならば、そのサーバアプリケーション45を起動させ、処理を依頼する。このとき、該当するサーバアプリケーション45が複数有る場合(すなわち、「サービス名」が同一で「バージョン」が異なる管理情報が複数有る場合)には、それらの「ステータス」を参照し、サービス可能な状態にある方に処理を依頼する。また、「サービス名」が同一の複数のサーバアプリケーション45のいずれもがサービス可能な状態にあるときには、いずれか1つのサーバアプリケーション45に処理を依頼する。

【0028】また、あるサーバアプリケーション45のバージョンアップ時には、ネームサービス43は、新たなサーバアプリケーション45の管理情報の登録を行う。このとき、ネームサービス43は、新たなサーバアプリケーション45の初期化処理等が完了し、サービス可能な状態となるまで、その「ステータス」を「サービス中断中」に設定しておき、サービス可能となった際に「サービス中」に設定を変更する。

【0029】また、あるサーバアプリケーション45の使用を停止する場合、ネームサービス43は、そのサーバアプリケーション45の管理情報を削除する。このとき、該当するサーバアプリケーション45が起動中ならば、その管理情報の「ステータス」を「サービス中断中」に設定して以後の処理依頼を割り振らないようにし、そのサーバアプリケーション45の処理の完了後、該当する管理情報を削除する。

【0030】また、あるサーバアプリケーション45についてその使用を以後停止する場合には、そのサーバアプリケーション45が起動されていなければ、その管理情報を削除し、起動中であれば、ステータスを中断中に設定して、以後の処理依頼を割り振らないようにし、処理が完了した後管理情報を削除する。

【0031】各サーバアプリケーション45は、例えば業務処理を行うためのプログラムであり、ネームサービス43から指示に応じて所定の処理を行い、処理結果を

ネームサービス43に返す。

【0032】本システムは、サーバ3においてサーバアプリケーション45を更改(バージョンアップ等)する際に、既存のバージョンのサーバアプリケーション45を削除せず残しておき、それらを同一サービス名でバージョン毎に管理する。これにより、あるサービス名のサーバアプリケーション45のバージョンアップ中に、クライアント1からそのサービス名を指定した処理依頼を受けた場合には、同一サービス名で古いバージョンのサーバアプリケーション45に処理を依頼することができるため、クライアント1へのサービスを停止することなく、継続的なサービス提供が可能となる。

【0033】以下、本システムの特徴部分であるサーバ3のネームサービス43による処理について具体的に説明する。例えば、図4に示すように、サービス名「Proc1」、バージョン「A」のサーバアプリケーション45Aがサーバ3に記憶されている状態で、クライアント1のクライアントアプリケーション23からサービス名「Proc1」を指定した処理依頼がサーバ3に送信される。このとき、サーバ3のネームサービス43は、管理情報に登録されているサービス名「Proc1」のサーバアプリケーション45Aに処理を依頼する。これに応じて、サーバアプリケーション45Aは所定の処理を行い、処理結果をネームサービス43に返す。ネームサービス43は、サーバアプリケーション45Aから受け取った処理結果を要求元のクライアントアプリケーション23に送る。

【0034】次に、サービス名「Proc1」のサーバアプリケーション45Aとバージョンが異なるサーバアプリケーション45B(バージョン「B」)を新たにサーバ3に組み込むこととする。この場合、図5に示すように、ネームサービス43は、新たなサーバアプリケーション45Bの管理情報を登録するが、このサーバアプリケーション45Bがサービス可能な状態となるまで(例えば、初期化処理が完了する等)、ステータスを「サービス中断中」に設定する。このとき、クライアント1のクライアントアプリケーション23からサービス名「Proc1」を指定した処理依頼がサーバ3に送信されたならば、サーバ3のネームサービス43は、管理情報を参照し、サービス名「Proc1」のサーバアプリケーション45Aと45Bを検出するが、サーバアプリケーション45Bのステータスが「サービス中断中」に設定されており、また、サーバアプリケーション45Aのステータスが「サービス中」に設定されているため、ネームサービス43は、サーバアプリケーション45Aに処理を依頼する。これに応じて、サーバアプリケーション45Aは所定の処理を行い、処理結果をネームサービス43に返す。ネームサービス43は、サーバアプリケーション45Aから受け取った処理結果を要求元のクライアントアプリケーション23に送る。

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【0035】次に、例えば、同一サービス名「Proc1」のサーバアプリケーション45A、45Bにおいて、サーバアプリケーション45Aのサービスを停止して、新たなサーバアプリケーション45Bのサービスを開始することとする。この場合、図6に示すように、ネームサービス43は、管理情報において、サーバアプリケーション45Aのステータスを「サービス中断中」に設定変更し、サーバアプリケーション45Bのステータスを「サービス中」に設定変更する。これにより、クライアントアプリケーション23からサービス名「Proc1」を指定した処理依頼を受信した場合、ネームサービス43は、サービス名「Proc1」のサーバアプリケーション45Aと45Bのうち、ステータスが「サービス中」に設定されているサーバアプリケーション45Bに処理を依頼する。また、以後、サーバアプリケーション45Aには処理を依頼することができないため、ネームサービス43は、サーバアプリケーション45Aの管理情報を削除する。なお、このとき、サーバアプリケーション45Aが実行中の場合には、その処理の完了を検出した後に管理情報を削除する。

【0036】このようにして、サーバ3にてサーバアプリケーション45をバージョンアップする場合等に、同一サービス名の既存のサーバアプリケーション45を残したまま、新たなバージョンのサーバアプリケーション45を組み込み、新たなバージョンのサーバアプリケーション45がサービス可能な状態になる前にクライアント1からの処理依頼を受けたときには、同一サービス名の既存のサーバアプリケーション45に処理を依頼する。これにより、バージョンアップ時等においても、クライアント1へのサービスの供給を停止させることなく、連続的なサービスの供給が可能となる。

【0037】また、各サーバアプリケーション45について、そのバージョンを管理することにより、同一サービス名で異なるバージョンのサーバアプリケーション45を共存させることが可能となる。

【0038】なお、上記説明では、クライアントアプリケーション23がサービス名を指定して処理依頼を送ると、ネームサービス43が管理情報を参照して適当なサーバアプリケーション45に処理を依頼しているが、クライアントアプリケーション23がサービス名とバージョンを指定できるようにしてもよい。この場合、ネームサービス43は、管理情報を参照して、指定されたサービス名及びバージョンに該当するサーバアプリケーション45を検出し、そのサーバアプリケーション45に処理を依頼する。

【0039】また、クライアントアプリケーション23がサービス名及びバージョンを指定する場合、サーバ3において、同一サービス名でそれぞれバージョンが異なる複数のサーバアプリケーション45のうち、互換性のあるものについての情報を互換性情報として登録し、ク

ライアントアプリケーション23から受けた処理依頼が指定するサービス名のサーバアプリケーション45のうち、該当するバージョンのものがない場合等には、ネームサービス43が、この互換性管理情報を参照して互換性のあるサーバアプリケーション45に処理を依頼するようにしてもよい。この互換性管理情報は、例えば図7に示すように、「サービス名」、「バージョン」、そのサーバアプリケーション45と互換性のあるもののバージョンを示す「互換バージョン」等のデータ項目を含む。

【0040】以下、上記互換性管理情報を用いたネームサービス43による処理を図8を参照して具体的に説明する。例えば、サービス名「Proc2」、バージョン「A」のサーバアプリケーション45Cと、サービス名「Proc2」、バージョン「C」のサーバアプリケーション45Dと、がサーバ3に記憶されている状態で、クライアント1のクライアントアプリケーション23からサービス名「Proc2」、バージョン「A」を指定した処理依頼がサーバ3に送信されたこととする。この場合、サーバ3のネームサービス43は、管理情報を参考し、該当する(バージョン「A」の)サーバアプリケーション45Cの「ステータス」が「サービス中」であることをチェックして、サーバアプリケーション45Cに処理を依頼する。

【0041】また、クライアントアプリケーション23からサービス名「Proc2」、バージョン「B」を指定した処理依頼がサーバ3に送信された場合には、処理依頼に該当するサーバアプリケーション45の管理情報がないため、サーバ3のネームサービス43は、互換性管理情報を参考し、サービス名「Proc2」、バージョン「B」のサーバアプリケーション45の「互換バージョン」が「C」であることから、サービス名「Proc2」、バージョン「C」のサーバアプリケーション45Dに処理を依頼する。

【0042】なお、クライアントアプリケーション23からの処理依頼にバージョンの指定がない場合(例えば、サービス名「Proc2」のみを指定する場合)には、ネームサービス43は、該当するサービス名のサーバアプリケーション45の中からいざれか任意のものを特定して処理を依頼するようにしてもよい。また、図8における互換性管理情報には、サービス名「Proc2」、バージョン「A」のサーバアプリケーション45Cの「互換バージョン」が「C」と設定されているため、クライアントアプリケーション23からの処理依頼が、サービス名「Proc2」、バージョン「A」を指定している場合、バージョン「C」のサーバアプリケーション45Dに処理を依頼してもよい。

【0043】また、サーバ3に、同一サービス名のサーバアプリケーション45であって、古いバージョンのものと新しいバージョンのものとを共存させている状態

で、ネームサービス43が、所定時刻までは古いバージョンのサーバアプリケーション45に処理を依頼し、それ以後は新規バージョンのサーバアプリケーション45に処理を依頼するようにしてもよい。

【0044】また、上記管理情報、互換性管理情報等のデータ構造、各項目のデータ形式等は一例でありこれに限定されない。例えば、「バージョン」の表現形式も任意であり、数値を用いてもよく、また、「version 1.00~1.99」、「version 1.[0~9][0~9]」、「version 1.xx」等の正規表現で示してもよく、バージョン2.00未満を、「version 2.00等と示すようにしてもよい。

【0045】なお、この発明のクライアントサーバシステムは、専用のシステムによらず、通常のコンピュータシステムを用いて実現可能である。例えば、コンピュータに上述の動作を実行するためのプログラムを格納した媒体(フロッピー(登録商標)ディスク、CD-ROM等)から該プログラムをインストールすることにより、上述の処理を実行するクライアント1、サーバ3を構成することができる。なお、上述の機能を、OSが分担又はOSとアプリケーションの共同により実現する場合等には、OS以外の部分のみを媒体に格納してもよい。また、上記ネームサービス43の機能をOSの一機能としてもよい。

【0046】また、コンピュータにプログラムを供給するための媒体は、通信媒体(通信回線、通信ネットワーク、通信システムのように、一時的にプログラムを保持する媒体)でも良い。例えば、通信ネットワークの掲示板(BBS)に該プログラムを掲示し、これをネットワークを介して配信してもよい。そして、このプログラムを起動し、OSの制御下で、他のアプリケーションプログラムと同様に実行することにより、上述の処理を実行することができる。

#### 【0047】

【発明の効果】以上説明したように、本発明によれば、同一のサービス名のアプリケーションをバージョン毎に管理し、各アプリケーションの管理情報からそれぞれがサービス可能な状態であるか否かを知ることができる。これにより、クライアントからの処理依頼により指定されたサーバアプリケーションがバージョンアップ中等でサービスできない状況にあっても、既存のサーバアプリケーションに処理を依頼することができるため、クライアントへのサービスを停止することなく、継続的なサービス提供が可能となる。

#### 【図面の簡単な説明】

【図1】本発明の実施の形態に係るクライアントサーバシステムの構成を模式的に示す図である。

【図2】図1のクライアントサーバシステムのソフトウェア構成の一例を示す図である。

【図3】管理情報のデータ構成の一例を説明するための

図である。

【図4】ネームサービスによる処理を説明するための図である。

【図5】新規のサーバアプリケーションが組み込まれた際のネームサービスによる処理を説明するための図である。

【図6】既存のサーバアプリケーションへの処理依頼を停止する際のネームサービスによる処理を説明するための図である。

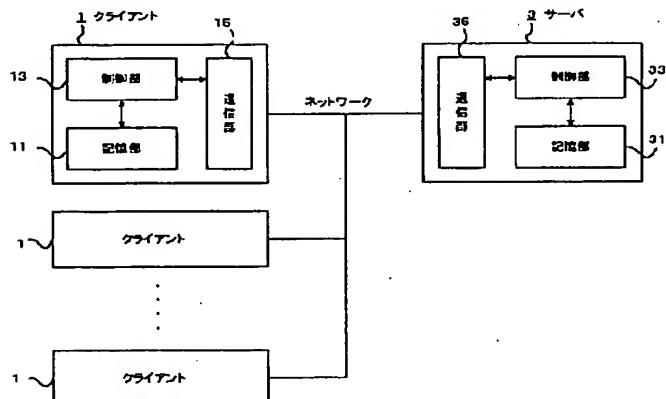
【図7】互換性管理情報のデータ構成の一例を説明するための図である。

【図8】互換性管理情報を用いたネームサービスによる処理を説明するための図である。

【符号の説明】

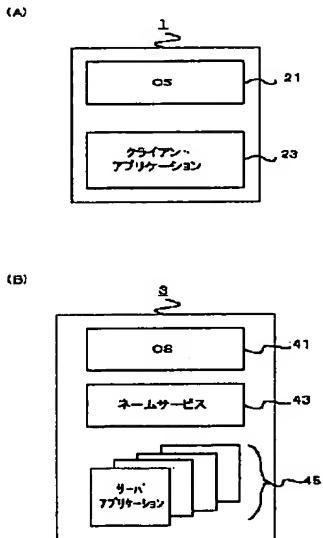
- |    |                |
|----|----------------|
| 1  | クライアント         |
| 3  | サーバ            |
| 11 | 記憶部            |
| 13 | 制御部            |
| 15 | 通信部            |
| 21 | OS             |
| 23 | クライアントアプリケーション |
| 31 | 記憶部            |
| 33 | 制御部            |
| 35 | 通信部            |
| 41 | OS             |
| 43 | ネームサービス        |
| 45 | サーバアプリケーション    |

【図1】



【図3】

【図2】

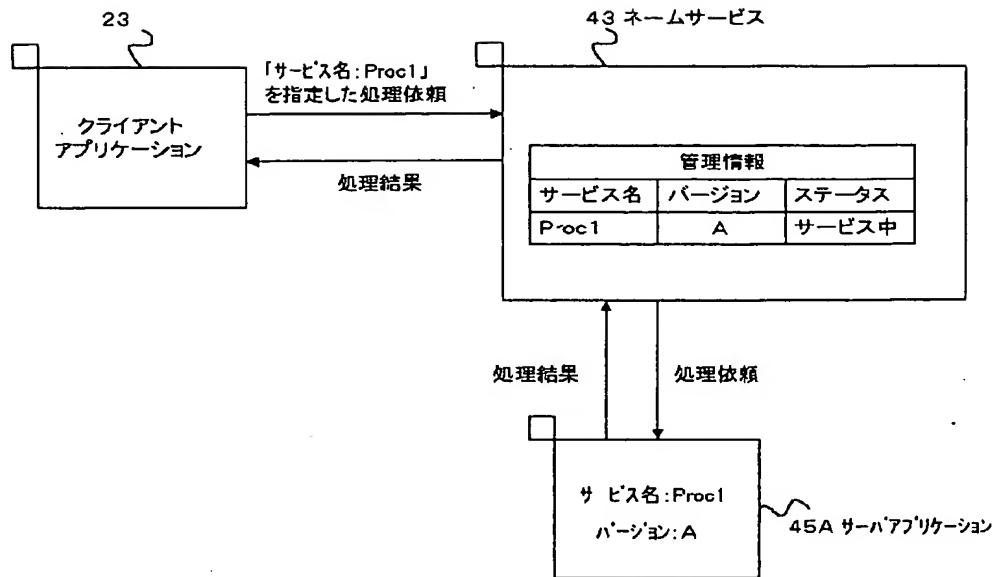


| 管 理 情 報 |       |         |
|---------|-------|---------|
| サービス名   | バージョン | ステータス   |
| Proc1   | A     | サービス中   |
| Proc1   | B     | サービス中断中 |
| ⋮       | ⋮     | ⋮       |
| ⋮       | ⋮     | ⋮       |
| ⋮       | ⋮     | ⋮       |

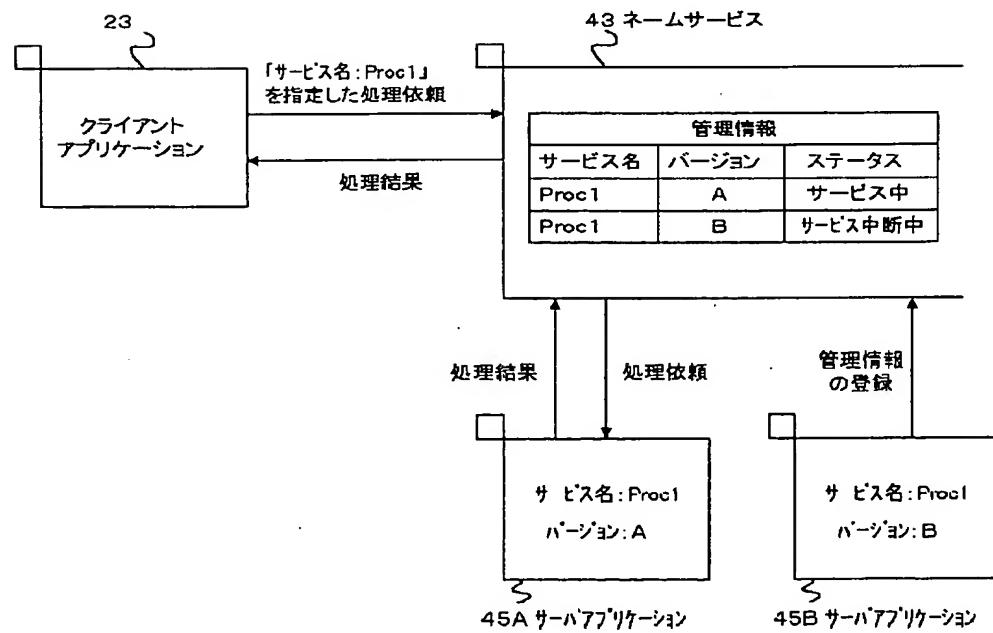
【図7】

| 互 换 性 管 理 情 報 |       |         |
|---------------|-------|---------|
| サービス名         | バージョン | 互換バージョン |
| Proc1         | A     | C       |
| Proc1         | B     | C       |
| Proc1         | C     |         |
| ⋮             | ⋮     | ⋮       |
| ⋮             | ⋮     | ⋮       |
| ⋮             | ⋮     | ⋮       |
| ⋮             | ⋮     | ⋮       |

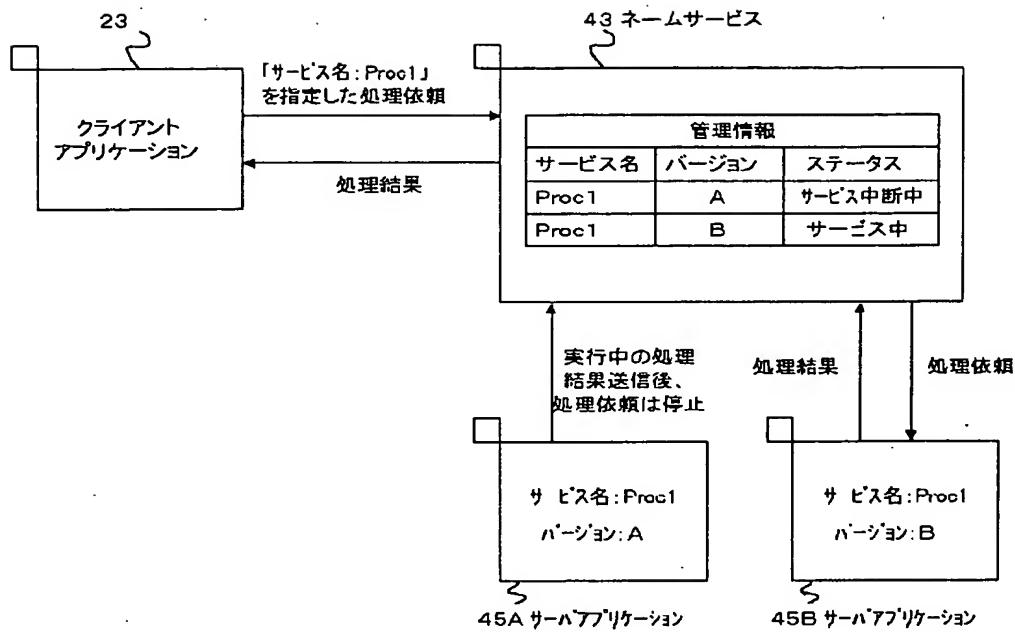
【図4】



【図5】



【図6】



【図8】

